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The Æginetan Marbles at Munich.

IN the year 1812 was lost to England one of the greatest treasures of art that the industry and perseverance of archæologists have yet discovered. Not even the Parthenaic marbles, not even the unearthed history of Herculaneum and Pompeii, Layard and Botta's Assyrian or Ninevite excavations, the Campana relics, the Rosetta stone of Boussard, or that extraordinary treasure, the sarcophagus of Belzoni, the Cyprian antiquities, or the recent finds of Schliemann, not one of these can be said to be of interest superior to the discovery,—in which took such an active share our accomplished countryman, the late Professor Cockerell,—of the Æginetan marbles now reposing at the "Glyptothek" of Munich.* The somewhat pretentious and scantily-filled halls of the museum contain little else but these choice treasures. The quaint and archaic statue of the Tenean Apollo,—found at the foot of the Acrocorinthus,—interesting chiefly as showing an early progressive step in the development of the sculptor's art from the Egyptian stiffness to the further stage to be seen in the Æginetan marbles; the magnificent statue of the Sleeping or Barbarini Faun, a noble and realistic work of antiquity; among the few Egyptian sculptures, a sitting figure of rare beauty,—these, with a few scattered works, none surpassing mediocrity, form the collection of the "Glyptothek," the world-wide fame of which rests, and justly, on its possession of the Æginetan marbles.

Apart from the great archæological and artistic value of these works, an interest more than ordinary will always appeal to the English visitor in the facts connected with their discovery. The story has been told before of Prof. Cockerell's share in the unearthing of these treasures, lost by ill-fortune to England. We can imagine what interest an architect, with sympathies as strong as Cockerell entertained for the sister arts, must have felt at his enthusiastic age on first beholding the fragments discovered at Ægina, and how immediately he must have seen with his brother *savants* the interesting link that now, we well understand, had thus been so unexpectedly come upon. The interest aroused at the time by the discovery in 1811 of these figures can be understood when it is remembered that they were the first works brought to light belonging to the school of Ægina, the existence of which had long been known to scholars through the classic writers. Great was the dismay caused when these works were seen to bear the peculiar character which till then had been attributed by archæologists to the works of the Etruscans; the long-suspected but generally-accepted Italian theory of the Etruscan origin of art received its death-blow, and archæology made one of its greatest advances on the road to a knowledge of the development of antique art.

The sculptures discovered at Ægina were seen to be the creations of the school which, itself derived from earlier sources, had led to the scarcely later perfection of Phidias. It is this feature alone which would give to these treasures an interest more than ordinary, but their artistic merit is scarcely less remarkable; their beauty, their grace, their life-like energy of action, the executive skill of the sculptor, make them almost equal to the Parthenaic marbles themselves. Each of the figures lives, their actions studied by an artist who is no mere copier of his predecessor's models, who, while we see him still strongly under the influence of their teachings and traditions, has reasoned, has compared, and has advanced by a great stride the development of his noble art towards its highest perfection.

Strange destiny that led Ægina, lying on the island-broken horizon line of Athens,* to produce such a strongly-marked art, the creations of which belonged to one of the two great differing and antagonistic elements which Hellenic art and civilisation displayed. Attica, the home of the Ionic race, takes in Athens, with its elegance, its important place; but to the Dorians Greece is indebted for the part they played. It was a sturdy element that the athletic Dorians introduced into their art; while the Dorians it was, we must ever remember, who first gave life to bronze, and under the magic hands of whose sculptors the placid marble first started into almost breathing existence. Under these two influences Greek art developed into its perfection. In architecture they were represented, one by the manly Doric, the other by the graceful Ionic, and the same difference we trace in their sculpture.

Though at Corinth, at Sparta, at Argos, and at Sicyon, the Dorians show us flourishing schools, it is in Ægina, the most famous of the Grecian islands, that we find the highest development of the Dorian art teachings. From an early period an enviable artistic reputation had been gained by the inhabitants of the island so long the rival of Athens, not alone in commerce and in art, but in deeds of prowess, "the eyesore of the Pirœus," as Pericles termed Ægina, which in the clear summer days shone out bright on the sharp line of the blue Mediterranean, and over which in unsettled weather hung threateningly the clouds. For centuries the Æginetans retained their renown as skilful artists, and their little island, barely twenty-two miles in circumference, they embellished with numerous public buildings and magnificent temples. Of all these the most famous was the temple of Jupiter, or Zeus Panhellenius, the ruins of which lie on the north-eastern portion of the island, situated conspicuously, as was the custom in classic times, on a broad platform. It was the pediment of this temple that the figures known as the Æginetan marbles decorated, and it was in the course of a visit made in 1811 by a number of architects to the island, with a view to taking the measurements of the interesting temple, that the sculptures were accidentally discovered. Professor Cockerell, in his invaluable work on the temple,* has told us, with a graphic and artistic grace and in a romantic style one would little expect to meet with, the incidents of the expedition.

It was an interesting party of artists and men of letters gathered at Athens in the autumn of 1810, and among whom the visit to Ægina was arranged. After a midnight farewell to Lord Byron, about to return home to reap his harvest of laurels, the party, composed of Cockerell, of Mr. Foster, an architect from Liverpool, of Baron Haller, the architect of the King of Bavaria, and several other Germans, set off. The measurements of the temple were being rapidly progressed with, when the unexpected discovery, at but a few inches below the surface, of a fragment of a sculptured figure in Parian marble suddenly awakened, as Cockerell himself says, a new interest. Seventeen figures were eventually unearthed from their quiet rest

* The Glyptothek, the first great building erected by King Louis, is the work of his architect, Klenze (1816); it is a Greek edifice in the Ionic style. Round the exterior are a number of niches containing the statues of the great sculptors of antiquity and modern times: in one of the niches on the eastern side, between the years 1857 and 1859, was placed, in company with the statues of Canova, of Thorwaldsen, Rauch, Tenerani, and Schwanthaler, a classically-draped statue of John Gibson (by Brugger). No one can begrudge Gibson his niche on the exterior of the Glyptothek, standing beside Schwanthaler; but we should like to see, in the sumptuous halls within, a bust, at least, of Charles Robert Cockerell, who did so much, not only for his own art, but in adding to the lustre of the capital of Bavaria by his connexion with the Æginetan marbles.

* In an exquisite sketch by Cockerell, which forms the frontispiece to his work on the Temple of Jupiter Panhellenius, we have an interesting view of Ægina from the land; the Archipelago and the Islands on the horizon, Mount Hymettus on the right; far out to the west, Trœzene, Epidaurus, Mount Arachneus; the centre occupied by Athens, the Acropolis, the Pirœus, the Long Walls, the Groves of Academia, the classic eminence of Colonos, and the shores of "unconquered Salamis."

* The Temples of Jupiter Panhellenius and Apollo Epicurius. London, 1860, in folio; numerous plates. Late as was the appearance of this volume, it is indeed fortunate that the occupations of an arduous profession did not entirely prevent, as they had so long delayed, the publication of this work before the last survivor of the interesting party which had visited Ægina in 1810 had passed away. The temple was visited some ten years later by Professor Donaldson, whose learned observations and generous assistance his friend Cockerell gratefully acknowledges in the pages of his work. Only a few days ago we heard our excellent friend the Professor expressing, with all his old enthusiasm, the hope that the asserted recent discovery of a statue of Minerva in Athens might be true. "I believe in it," he said, "because I wish it."

of fifteen, perhaps twenty, centuries. Such is the simple account of the discovery of these treasures. How they failed to fall into our hands, Professor Cockerell endeavours at some length to explain, and a certain cold comfort is to be obtained from the explanation, the more so as the blame that the public are so apt to attribute to "the authorities" is, in this case, not so deserved as it has been in several other instances more familiar that have come up since those days.

It appears that the sculptures, after the difficulties had been overcome by the means usual with Turkish officials, were taken in fragments, as they had been found, to Zante. During this time both the English and German discoverers were endeavouring to induce their respective Governments to purchase the treasures, but, difficulties arising, it was agreed to advertise, in the *Gazette* of every country in Europe, the sale of the marbles. The sale was to take place at Zante. England, having determined to acquire the treasures, immediately sent out a brig-of-war. It being feared that the French might seize Zante, the marbles were removed to Malta; thither Mr. Taylor Combe, keeper of the antiques, was sent with orders to purchase the treasures, it being naturally believed that their sale would take place in Malta, but the sale had been held at Zante, and through this unaccountable misunderstanding,—which the telegraph of to-day would have prevented,—Prince Louis of Bavaria was able to purchase, at a sum considerably less than what we had determined to pay, these priceless relics. It must ever remain a source of deep regret, notwithstanding that they repose in such worthy hands, that we were thus prevented from possessing the Æginetan marbles, which in company with the so-called Elgin marbles, would have rendered our British Museum even more worthy than at present to be considered the choicest collection in the world of specimens of antique art. In the present day, however, at Munich these works are almost as accessible for purposes of study as on the banks of the Thames.

After all that the Germans have written concerning these interesting fragments, it is not our intention to enter into any one of the many vexed questions they innocently have raised; suffice it to say that the figures are those of warriors engaged in a Homeric struggle, the representation of which was a favourite artistic "motive" of the Greeks. Equally needless at this date, and in an article such as this, to enter into any lengthy details regarding actions of the interesting figures which compose the two groups of the pediments as they are arranged in the Munich Museum. A peculiar interest is attached to these lifelike works, in which is still evident so much of the archaic treatment of the earlier schools; in one case, in the carefully-dressed hair, but chiefly in the traditional and unmeaning smile on the faces even of the warriors warmest in action, the existence of which we can now, since the discovery of the Cyprian antiquities, trace back to Asia, and the evident origin of which may be explained by the desire of the artist to impress a life on his creations; but this smile in these warriors is not the exasperating simper of the Cyprian works,—it is a smile which, were it not on the face of the wounded and unwounded alike, we would almost excuse. It is impossible, however, to agree with so distinguished a critic as M. Vitet, when, in speaking of these works in comparison with the marbles of Eleusis, he refers to "these hideous heads, these faces without life, without intelligence, immovable, grimacing, stupid, physiognomies almost bestial, which seem the work of an art half-puerile, half-barbarous." Even hasty inspection will reveal none of these defects in the work of the unknown artist who wrought so lovingly on these living, moving warriors, watched over by the hieratically stiff and quaint Minerva, for whose archaism we, at least, have ample reason. A striking similarity, it must be admitted, will be found in these figures, but it is a similarity that would seem to arise from seeing the same human being in different attitudes, each minutely studied in its muscular development.

Here lies one of the chief features of the Dorian art. The Æginetans, famed as skilful navigators and widely-patronised artists, were no less successful in the great games, and their reputation they zealously kept alive by the severe training of the gymnasium; here it was that the artists studied the human form; here opportunities were afforded for this study which alone the life of Greece could give the observant artist. Herein lies the difficulty, the impossibility, of modern artists even hoping to rival in this direction their classic predecessors.

Professor Cockerell, in his valuable work, devoted not alone to the consideration of these examples of sculpture, but to a serious and learned discussion of Greek architecture, suggested by the study of the temple of Jupiter Panhellenius, has told us a great deal concerning these relics. That the figures were coloured is no longer a matter of doubt, as also that the temple itself was gaily ornamented,—a fact proved alone by the discovery of many fragments on which were found at the moment the colours in all their vividness, but which, on exposure, soon disappeared. The shields when found showed traces of having been painted red inside; the lips and pupils of the eyes seem also to have been slightly coloured; the ornaments were in bronze, the holes corroded with green still showing their original position; all the swords and spears were of bronze*; the rest of the temple was also highly decorated in polychrome, of the scheme of which Professor Cockerell gives us a number of careful studies. Strongly as it was at one time denounced, it is now universally admitted that the Greek architects were warm advocates of the use of colour: the brilliancy of a climate like that of Greece, which would render the white marble edifices not a little spectral to the eye; the large amount of time spent out of doors by the Greek, and his consequent desire to find there the decorative objects which we Northerners seek rather in our home surroundings; the small size of the architectural features, particularly in such a case as the Temple of Mount Panhellenius, requiring the aid of colour to heighten the minute details, may be adduced as some of the many reasons brought forward to explain the use of colour in the architecture of antiquity: that in the sculptural decoration of his coloured work the architect should require the same regard to effect, is only natural.

Coming from an artist like Cockerell,—a "lover," as he calls himself, and an "eye-witness" of the discovery of these invaluable treasures,—is it not sad to find that he has many complaints to make of the restoration of the figures of the pediment of the Panhellenian temple? Thorwaldsen, it will be remembered, was entrusted with the task of their restoration, but in spite of the renown of the great sculptor, Cockerell does not hesitate to express his dissatisfaction with the work of the Danish artist. Cockerell's connexion with the marbles entitles him certainly to an opinion, "present" as he was, as he himself states, "at every operation, watching with zealous and delighted attention every stroke of the excavations, and noting down each successive revelation with line, rule, and compass." He had the advantage of making careful drawings of all the figures, in company with his friends, in 1811, and later on, of "drawing every piece a second time, while under the care and restoration of Wagner and Thorwaldsen, at Rome, five years later." The attitudes in the course of the restoration have been "possibly" (Cockerell modestly puts it) "disguised; heads, helmets, and limbs have been supplied without sufficient authority," such "arbitrary assumptions," we must agree in congratulating ourselves, have never been allowed with our Hellenic treasures.

Of the grouping, again, Cockerell complains; he contends that, in each pediment, there must have been at least thirteen figures, not ten, as the existing arrangement of one pediment would lead the spectator to suppose,† and this view is amply supported by the grouping suggested by Cockerell himself, in a careful series of drawings. Fragments of no less than thirty distinct figures were found on the spot at the time of the discovery; this, at least, would warrant the supposition of the larger number. Surely, too, it must be regretted that the model of the temple, which is perched high against the wall above the grouped figures of the pediments, is far from obtaining the approbation of Cockerell; his careful studies and their satisfactory results,—adopted unhesitatingly by the French archæologists,—are in this coarsely-coloured German model entirely put aside. After learning this fact it can be imagined with what diminished interest the visitor looks on this otherwise instructive feature.

But in spite of our knowledge of their blemishes, the Æginetan marbles cannot lose the peculiar value which is attached to them,—that of being the creations of the art which preceded the glories of Phidias.* It is not difficult, with these works before one showing such intimate acquaintance with human anatomy and proportion, such study of human action, to understand the advent of an artist like the creator of the Parthenaic marbles. In his hands the still remaining quaintnesses were to disappear, and while the master was to profit by the learning and the study shown in his predecessor's work, he was to stamp his own creations with all the ideal divinity, the sentiment of breathing existence and expression, the characteristic generalisation of details, the "style," in a word, which marks the perfection of his work. Athenian by blood, Phidias by education is a Dorian, and in him were to be blended the traditions of the two prolific schools; form and conception were at length to be united,—the religious aspirations of Attica with the realistic sturdy expressions of the Dorian schools. While we can never bestow too profound an admiration on the great Athenian, we see by these Æginetan marbles that in the development of his art he takes his due place, not rising as if by a freak of Providence, but the predestined genius whose deep study was to profit by the lessons and the efforts of generations of less fortunate predecessors. This is the chief interest that surrounds the marbles now at Munich,—an interest which, notwithstanding their exile from their home, it is impossible not to feel, in spite of their being deprived of those surroundings for which they were originally designed. Placed as they are, alone, unrelieved, unaided by the architecture in which their marked characteristics shone out with even greater force, unframed in the deep low tympanum in which each change of light and shade added a fresh charm and life to the composition,† it is, indeed, difficult to thoroughly understand, still less to picture, these marvellous works of a land so different to our gloomy North. In that bright, clear Southern atmosphere, where the deep, cool, transparent shadows mark boldly every form; where the blue of the island-dotted sea, the dazzling haziness of the classic mountain lines, arouse the recollection of the long-past glorious days sung by the poet, there one can realise the perfection of the art of Greece,—an art we can never hope to surpass.

The Rowland Hill Memorial.—Fourteen models for the Rowland Hill Memorial are now on view at the Mansion House, pending the final decision of the committee of selection. Nine are in a standing position, and the remainder sitting. We have received no invitation to see them. At a meeting of the committee, the sub-committee reported they were strongly and unanimously of opinion that the statue should be an erect and not a sitting figure. Sir Frederick Leighton had, on the invitation of the committee, placed his services at their disposal in the selection of the best work of art, and had suggested that the committee should also ask two senior sculptor members of the Royal Academy to act with him, and that their award should be final. The committee proposed, therefore, to invite Mr. Calder Marshall, R.A., and Mr. Woolner, R.A., to join Sir Frederick Leighton as umpires, and they proposed, on receiving the final award, to make the necessary preparations with the successful artist for the erection of the statue, in accordance with the conditions laid down. These proposals were agreed to.

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* Cockerell draws attention to the fact of the costume, or, rather, armour, of these warriors being archæologically considered by the artist: the armour is that supposed to have been worn in the days of the great Trojan struggle.

† In this pediment the restoration groups ten figures, in the other only four; the fragments which are arranged on a shelf close at hand, are by no means the least interesting portion of the whole; the beauty of some of the less injured pieces is exceptional. An interesting feature is offered in the *acroteria* of one of the pediments.

* Much as we are all indebted to the representations of ancient art by the photograph, for accurate purposes of comparison it is difficult to form a correct idea of the Æginetan marbles from photography; the Elgin marbles, from their subdued colour, the result of their long residence in Bloomsbury, suffer less when represented by the photograph, but the Æginetan marbles, which have reposed for the last half-century and more in a clear climate like that of Munich, have retained all the brilliancy so familiar to travellers in the East, who find so great a difference in the colour of Northern sculpture and architecture.

† The depth of the tympanum beyond the plane of the entablature shown in one of Cockerell's drawings is well calculated to lead to the employment of entire statues instead of reliefs, commonly used in Roman and modern works of this description. This interesting practice of the Greeks was first made known to the learned of Europe by the transport of the marbles of the Parthenon to England; even in the restorations given us by Stuart (in the last century) we are left to suppose that these compositions were in relief only, and scarcely had this fact been appreciated when the marbles of Ægina were brought to light in confirmation of this view.

ANGELS AND DRAGONS IN ART.

BY A SCULPTOR.

"There was war in Heaven: Michael and his Angels fought against the Dragon" . . . . . "and the Dragon fought, and prevailed not" . . . . . "and the great Dragon was cast out,—that old serpent."

AN excuse for our title may be found in this quotation from the Apocalypse. The contention of good and evil is thus typified by the struggle of good and evil winged beings; for the dragon is as much a reptile with wings as the form of the angel is that of a man similarly gifted; and thus the enmity set on earth between the race of man and the creature under whose form he was deceived was anticipated in the skies.

One of the earliest and most frequent yearnings of human beings has been for flight. We see the birds, how easily and swiftly they transport themselves from place to place, and overpass all obstacles with an ease which, with all our science and invention, we are wholly unable to imitate. It would almost appear as if their powers in the air, in some sort, put them on an equality with us and our powers of mind; inasmuch as, with all these, we can but crawl on the surface of the globe, while they sail in the ether above it without let or hindrance, and dominate over us in physical position, as much as we do over them in mental. It might even seem as if the Lord of All had ordained the flight of the bird to teach us humility, and to speak to us a familiar lesson of "thus far shalt thou go, and no farther"; for all the attempts of the human race in various ages to solve this problem have been attended with failure.

In imagination, however, we have done it all. Dreams of flying are almost universal. Young people always dream of flying, and old people sometimes; and these dreams are not only dreams of achievement in sleep, but are day-dreams of hope also. But our wings do not bud. Plumes do not shoot out from our shoulders, and the waving of our pinions in the air is confined to our reveries and hallucinations.

But are we to deduce from this that there are no such beings as angels? Far from it, for we have been speaking only of the powers of man and not of those of the Creator. Evidently on a subject like this we may cite Scripture, but this is not necessary to our argument. The analogies of Nature alone will do what we require. Every fresh exploration in astronomy displays to us new forms and arrangements, and infinity has room for every variety. Before the planet Saturn was investigated what astronomer imagined vast rings of matter independently, and yet securely, rotating round a central body, itself in flight through space: and who ever conceived the possibility of enormous systems of several stars wheeling round each other and their common focus, in complicated and yet perfect regularity, until observation had fixed it as a fact.

How, then, can we presume to put a limit to the unlimited, or, in the face of the endless multiplicity of arrangements which we see to be a law of nature, deny a continuance of the variety of forms which vitality may take in even the nearest of our family circle of globes which derive their light and energy from our central luminary? The nearest planet may be peopled by sentient beings, of forms which, although not identical with those of seraph, cherub, or ministering angel, may have such affinity to them as to afford no starting-point to the objections with which the subject has been met here, from those who would assume an undue authority, like an insect who dwells its whole life on one leaf of a tree, and would judge of the whole forest in which it stands, and prescribe its fashion.

On this subject of the angelic nature a very interesting treatise, with that title, by a highly poetic English sculptor, Mr. Frederick Thrupp, was published last year, and as it expatiates at some length on this point, we will extract a passage or two. "It is rather a bold assertion," he says, "of students of anatomy,—for in this matter all are learners,—that they should assert a winged angel to be an impossible winged structure; that in the shoulders there is no room for wings to obtain such a mode of progression by muscular and bone machinery"; and he adds, "who would not laugh or sneer at the proposed arrangement of putting at the end of a nose an arm which should be strong enough to root up a tree, and withal, so fine in power of grasp as to pick up a small coin; neither solid nor hollow, to serve as a trumpet, soft and lithesome to embrace lovingly, hard to knock down heavily? Yet such is the proboscis of an elephant." Having thus illustrated what degree of weight the proposed limitation is worth, he concludes by saying, "My position is this: the angel is a spiritual being, and our fleshly body resembles it in outward form although it may not have been so exactly similar as to be a counterpart in shoulder-blade and muscular insertion."

In turning from this first part of our subject to the second, we may observe that the argument for the possible entity of the dragon in actual form, as well as symbolic existence, rests on much the same reasons as that of the angel. The angel is a winged man. A dragon is a winged reptile. The original dragon of Scripture, however, is not a winged animal at all. It was a serpent, and Satan when thus transformed lost his wings, for as the tempter of Eve he had no wings; but as "the Prince of the Power of the Air" they are restored to him. Thus, also, when portrayed as the evil spirit, contending with saints, as in the dragon's combat with St. George, wings form part of his representation as struggling, pierced, and vanquished, beneath the horse's feet.

With the above preamble, we will proceed to some examples in art of representations of these ministers of the various contentions of good and evil, which from the earliest time have ever been, and still are, active and incessant in the world.

We are told that there are various hierarchies of angels, heralds, and executants of God's will, but the first who are mentioned in Scripture are ministers of judgment rather than of mercy,—the Cherubim who guarded the gates of Paradise after the fall of man. The well-known design of Raffaelle's of this subject of the Expulsion does not appear exactly in accord with the text, as the form of an angel and not of a cherub is adopted, but the design is reverent, beautiful, and acceptable.

Our space forbids the attempt to follow *seriatim* the passages of Scripture which speak of angels, beyond a few instances; but the next, and, indeed, the first which mentions an angel especially as such, is in a mission of mercy, and occurs in the sixteenth chapter of Genesis, in which it is narrated that the Angel of the Lord sought Hagar in the wilderness, and caused her to return to the home of the Patriarch.

The beautiful design by Raffaelle, of Jacob's dream, early in the Bible, occurs next, as embodying that delightful vision of angels ascending a staircase of heaven, conveying the consoling thought of this intercommunication between heaven and earth, of prayers going up to heaven in an upward stream, and meeting Mercy coming down.

Heliodorus stricken in the Temple is a ministry of a different kind,—one of wrath. But the angels are without wings. One is represented on a courser, while the others bound along the pavement with a supernatural lightness. The destroying angel who, in the dead of night, smote all the first-born of Egypt, is represented either with or without wings, and the same may be said of the angel of the pillar during the exodus of the children of Israel, who hovered, in protection to the one side, and in wrath to the other, during their passage from Egypt.

Without attempting descriptions of the orders of angels as cherubim, seraphim, thrones, dominions, powers, principalities, archangels, angels, and virtues, which are to be found elsewhere, we may, at least, well bear in mind that the meaning of "angel" is "messenger," angel of the Lord, messenger of God. The Hebrew word is *melach*. The term is used variously in the Scriptures,—sometimes even indicating the presence of the Deity himself; or otherwise only Providence, and, on occasion, even the impersonal agents of His will, as a flame of fire, or the wind. At other times it denotes the class of superior beings to which especially applies the name of angels.

It is under the usual type of a two-winged man with a noble countenance and heroic and graceful form, that, in union with the incidents in which they took part, the introduction of angels has formed a fertile and glorious opportunity for the pencil, brush, and chisel; but also, in the earlier times of the Church, especially under the Byzantine aspect, cherubim and seraphim were represented with four and six wings, of the utmost brilliancy of colour,—red, green, and blue, and emblazoned with gold. The angels, however, of art of the Middle Ages, and also those of Flaxman, Blake, and other artists of modern days, have usually been of the simpler form. Milton, however, in his magnificent sacred epic, does not blench from a full image of the seraph, in his description of the appearance of the angel Raphael to our first parents in Paradise:—

"A seraph wing'd, six wings he wore to shade
His lineaments divine: the pair that clad
Each shoulder broad came mantling o'er his breast,
With regal ornament; the middle pair
Girt, like a starry zone, his waist, and round
Skirted his loins and thighs with downy gold,
And colours dipt in heaven; the third, his feet
Shadow'd from either heel with feather'd mail,
Sky-tinctured grain. Like Maia's son he stood,
And shook his plumes, that heavenly fragrance fill'd
The circuit wide."

This is a glorious vision, and although not suited perhaps to the style of art of the day, it may possibly be the day's fault and not that of the image. In ancient time we have, at any rate, the highest authority for the realisation, at that period, of these forms of ministers of grace, in that the images of "two Cherubim of gold of beaten work" adorned the mercy-seat of the Holy of Holies. "And the Cherubim shall stretch forth their wings on high, covering the mercy-seat with their wings, and their faces shall look one to another: toward the mercy-seat shall the faces of the Cherubim be." While, however, the idols of the heathen were objects of worship, the Cherubim were themselves worshipping, turning their faces to the mercy-seat and covering it with their wings. It is true that, in his account of the after building of the Temple of Solomon, Josephus says, "What the figure of the Cherubim was it is impossible to express"; but if the posture of adoration be taken, and the four or six wings of each cherub appropriately disposed, an image of great and holy expression is attainable.

Beyond this presentation of all we know of this most ancient and sacred representation of one of the two highest orders of angels, we are unable to advance or investigate, and will address a few sentences in the opposite direction to the spirit of darkness, under the form of the Dragon.

This word answers generally to the Hebrew *Thannim* or *Thannin*, which signifies any great monster, either of land or water, crocodiles, or hugh serpents, or even great fish. Moses speaks of fiery serpents under the name *Zeraph*. It is also a term applied in the Bible to cruel tyrants, and to any hurtful thing. Red frequently occurs as the colour of the dragon, as also the Chinese usually represent him, and in Revelations he is especially spoken of "As a great red dragon, having seven heads, and ten horns, and seven crowns upon his head."

The term "dragons" is frequently applied in the Old Testament to evil existences associated with misery, as, in the mention of a city or a country reduced to a wilderness, it is said to be a dwelling place for dragons. Isaiah, in threatening judgments, says, "and the wild beasts of the islands shall cry in their desolate houses, and dragons in their pleasant palaces"; "and 'brambles' shall come up in the fortresses thereof, and it shall be a habitation for dragons." And Jeremiah, in his lamentation for impending punishments, has this passage, "And I will make Jerusalem heaps, and a den of dragons."

For the great prototype of the dragon, however, of course we recur from these smaller images to him who, in the powerful verse of Milton, is represented as having been by

"The Almighty power,
"Hurl'd headlong flaming from the ethereal sky,
With hideous ruin and combustion, down
To bottomless perdition."

The agent of all evil upon earth, the father of Sin and Death, is set forth in such magnificent imagery in the grand sacred epic by our great poet, that he almost perforce becomes its hero, even in spite of the desire of Milton to produce a contrary impression; and the reader has even to struggle with this bias to do justice to the theme and its due teaching. When, however, his discomfiture completed and lost to hope, Satan takes that form which, in our church at least, is the representative of wickedness, and the embodiment of active evil, we cease to recognise him except as a brutal emblem of contention, continual and never relaxing, with the spirits of good; and it is after this fashion that he appears in art,—in deadly enmity with mankind,—and waging war on earth as well as in heaven with angels and saints.

The most popular representation of our own St. George, indeed, portrays this Christian knight as fighting with him in combat *à outrance*, which is but a parable in fact,

although apt to be obscured by the story, of "the Fight of Faith with the Evil Spirit." Under this view, and as it furnishes the popular portrait of the received dragon of our dispensation and legendary lore, a sentence from the reprint from the black-letter edition of the "Seven Champions of Christendom," of the time of James I., may be welcome. "St. George," who is engaged in the adventure of saving the fair Sabra from the voracious monster, "like a bold and daring hero, then entered the valley where the dragon had his abode, who no sooner had sight of him but his leathern throat sent forth a sound more terrible than thunder. The size of this fell dragon was fearful to behold: for from his shoulders to his tail the length was 50 ft. The glittering scales upon his body were as bright as silver, but harder than brass, and his belly was of gold, and larger than a tun." Notwithstanding, however, his armour and his vast proportions, our Christian knight, of course, overcomes him, cuts off his head, and preserves the royal maiden.

Although this dragon destroyed by our patron saint may be considered as the popular typical dragon of our Christian dispensation, he varies but little from the Classic examples in the heathen mythology, as, for instance, from the one who guarded the golden fruit in the Garden of the Hesperides, and that other who had charge of the golden fleece, and was done to death by Jason. All more or less are great crocodiles with wings. Although they are like this reptile, however, they do not appear in Egyptian art, but may have come originally from China, through India, unless, indeed, they were independently imagined by most nations, as is very likely. They appear, at any rate, early over a wide extent of the globe, as on the old Grecian shields, and the ancient armorial bearings and legends of the Northmen, and also in the Nebelungen Lied, in which the Achilles of the poem, Singfried the Invulnerable, kills a dragon at Worms.

China and Japan, however, seem to have long been, even in remote ages, the headquarters of the dragon; and in China especially he appears to hold the position of a god rather than of a demon. There is a "beauty of holiness" which may be said to be represented by the angel, and on the other hand there may be almost said to be a beauty of ugliness, according to the perverted estimation of the Chinese for the dragon and other monsters, for which they cherish the most ardent admiration, which we only bestow on the beautiful. For the chief enhancements in painting and sculpture on our buildings we love to adopt pleasing images; while they, on the other hand, seek them in what is horrible, and even for the figure-heads of their vessels they have recourse to some frightful representation, which they acknowledge is devised with a view of terrifying their enemies.

Until we became fully acquainted with the powers of the Chinese and Japanese in this department of terrific art, we might have conceived some of our old Gothic artists as supereminent in that line; but, according to our present knowledge, they must hide their diminished heads, and bow to the extreme Oriental. In the dragon, for instance, nothing that the West has produced can vie with the villainous aspect of some of the Japanese bronze dragons, who, with concentrated rage and intensified tetanus, appear to grasp the handles and bodies and tops of their vases with a fury almost supernatural. We may, however, be well reconciled to compound with their excelling us in this department of art, as they make no pretence to emulating us in the representation of angels, or of the beautiful among the human race.

The dragon is certainly not, *per se*, a subject that we should desire to expend a large portion of our time or art in representing, unless in as far as it may serve as a contrast to the angel and other beneficent beings, and as a shadow relieving and emphasising their brightness. In this aspect, however, in accordance with the teachings of our Church, it may well, at least occasionally, be introduced in the decorative portions of our sacred edifices, although, of course, in subordinate situations. As good is, in degree, founded on the suppression of evil, a column may, esthetically, well rest on the representation of a vanquished dragon; although this creature may not so appropriately appear on its capital, except, perhaps, in a crypt. Angels, on the other hand, may suitably occupy spandrels, both in respect to æsthetic sentiment and as also that, either seated or erect, with their feet together, and, their wings spread, their figures are readily adjusted in such situations.

In an ecclesiastical edifice, in which the central culminating form of a dome, itself a symbol of the arch of Heaven, will ever remain the most dignified and glorious feature, while the lower walls of its nave, aisles, and chapels suitably receive subjects illustrative of the history of the Church on earth, the dome itself may be especially reserved for the representation of the Heavenly Host; saints and angels in glory, a holy inspiration of praise and thanksgiving lifting the soul from earth to heaven, as when, in the words of Job, "The morning stars sang together, and all the sons of God shouted for joy."

As may be recognised, our space has only permitted a short and cursory view of some points of this subject, which might, nevertheless, in able and worthy hands, yield abundant materials for a literary and artistic work of great interest, not only to the *virtuoso*, but to the general reader.

THE BURLINGTON HOUSE LOAN EXHIBITION.

"THE cry is still, they come!" and there is no evidence as yet of any falling short in the supply of works by old masters to keep up these interesting and valuable exhibitions, or any necessity for turning back to the re-exhibition of works previously lent here. The twelfth exhibition is full of fine and interesting works, and inferior to none, except those of the first year or two, when the field was entirely fresh.

The practice which the Royal Academy have observed during the last two or three years, of adding to the collection of pictures a collection of drawings or some other subsidiary works of art, presenting artistic or historical interest of a different kind from that represented by large finished paintings, has been provided for this year by the loan from University College of the large and interesting collection of studies by Flaxman in their possession. This collection was open to the inspection, at University College, of any one who asked to see it, but it was not, of course, the subject of any advertising or other public manner of recommending it to attention, and consequently it was practically known to but a few persons. It was partly on this account that some time ago we devoted a long leading-article to a description of the contents of the collection, and to some remarks on the genius of Flaxman, to which we may be allowed to refer the reader. We are very glad to see such a collection of drawings of so great and noble a genius brought from the semi-privacy of their usual place of keeping and arranged so as to afford every facility for their complete inspection by those who can understand, or can learn to understand, the beauty and significance of these small drawings. We hope visitors to the rooms will give them due attention and study. The lack of any adequate appreciation of the genius of Flaxman, even among people who profess great interest in art, is really deplorable, and it is not creditable to the boasted art-culture of the day that English people should require to have it explained to them how great a genius their country possessed in Flaxman. That this is so is partly to be explained, perhaps, by the fact that there has been a great reaction in favour of colour in this country, and the fashion of dilettantism is turning a great deal towards the style of highly-coloured decorative art which is so largely illustrated at the Grosvenor Gallery. Flaxman's designs in drawing were the designs of a sculptor with whom form was the most important element, and who, in fact, never meddled with colour at all; the best of them are purely outline, without even the modelling or relief of shading, and they are small in scale and often very slightly sketched. It appears to us, however, that these very characteristics make the exhibition of these studies peculiarly valuable at present. At a time when so much is made of mere manipulation in art, and when the true spirit of classic art, its strength tempered by refinement, is so much lost sight of in the pursuit of a kind of sentimental imitation of classic art, graceful but melancholy and effeminate, it ought to be good for people to look at drawings which show how a grand style can be illustrated on a small scale and with the simplest means,—how figures and groups can be designed in a spirit that is graceful and yet manly and robust,—how poetry and sentiment may be conveyed through the human figure without ignoring or falling short in power and correctness of drawing. In the productions of one school of painters of the day we have recently seen, and are in process of seeing, that the highest profession of poetic sentiment and intent, the most elaborate finish of accessories, will not atone for a weak and mannered style of drawing, for affected archaism, for the mannered repetition of figures of a similar and very enervated type. Flaxman seems to remind us how, in the highest class of art, it is the idea and the power of expressing it which make the real value of the work, not the elaboration of finish; to show us that grandeur does not consist in mere size, but that an outline-figure 2 in. or 3 in. high may be grand, or pathetic, or lovely, in the highest degree, if looked at by well-tutored eyes. For art such as that of Flaxman demands something from the spectator. It is the very last kind of production to appeal to vulgar or uneducated eyes. His outline designs to Homer and Hesiod, Æschylus and Dante (the studies for many of which are here), represent just what is essential to the expression of the figures and the telling of the story; what is essential, but nothing more. They are like abstract ideas of the men and women, the mortals and immortals, created by the poets. So purely ideal is the manner in which they are presented that we never feel our faith in them disturbed by any collision with the mere prose-view of the possibilities of the situation. The strength and manliness of Achilles, the beauty of Venus, the majestic youth of the Sun-god reining in his horses, are outlined to us in a way that defines with the utmost clearness the artist's idea, and yet leaves our fancy free to play round it in our own way. The beauty and power of the drawing and foreshortening in these works should be compared with the works of Blake, the friend and admirer of Flaxman. Blake had a far wilder imagination than Flaxman, but he was never certain of his drawing; and the rather excited estimate of Blake's genius which has been formed of late years, stimulated by some very enthusiastic critics, has done some injury by leading people to overlook or make light of the great and sometimes absurd defects of Blake's drawing, in admiration of his undoubtedly remarkable flights of imagination. He *meant* more wonderful things than Flaxman ever imagined, but he could not express them articulately. In the study of Flaxman's designs we see works in which the hand was always able to show what the brain conceived, and in which imagination never outsteps the modesty of nature. Flaxman has a few little mannerisms, but they are not very prominent; the most marked one is a liking for a peculiar way of grouping together receding figures so as to make them appear to move off with one consentaneous motion; but even this does not occur very often, and on the whole his designs, though with an unmistakable style stamped upon them, are wonderfully free from mannerism. We may observe that in addition to the drawings now lent, University College is also in possession of a large number of casts and models by Flaxman, and we hope that in a future loan exhibition the college may be induced to lend these also as a further means of bringing Flaxman's art more prominently under the notice of the public of the present day, or find some means of leading the public to go to Gower-street.

The paintings exhibited fill four of the galleries. One of the most noteworthy paintings in the first room is Mr. Louis Huth's splendid Hogarth, "The Lady's Last Stake," originally exhibited under the title "Picquet: or Virtue in Danger," representing a scene where a young married lady, who has lost all her money and jewels to an officer over the card-table, is offered the return of the whole at the price of her honour. The picture has been very well taken care of, and thus gives an idea of greater brilliancy of execution than in many other works of the artist; the accessories and furniture are painted with the most minute and admirable realism, the two figures are most expressive in their action and demeanour, without the least exaggeration. The lady, who is one of Hogarth's beautiful women, in that style of fresh and rather childlike and naïve beauty which he could express so well, sits with her chair turned away from the card-table, half turning her back on the addresses of her companion, and striving to be outwardly composed.

Hogarth has given, in his peculiar way, additional point to the scene by the clock on the chimneypiece with the figure of Time and the word "*Nunc*" engraved underneath; now is the moment on which the making or marring of a life turns. It is a most impressive work, and all the more so from its perfectly real character,—that of a drawing-room tragedy in actual life, with no mock-heroics about it.

Among the interesting works in the same room is George Morland's series, somewhat *à la* Hogarth, of the progress of a certain "Letitia" from innocence to sin, and her final repentance and reconciliation with her parents. In this case, too, it is "an officer" who is the agent of temptation; the army seem by common consent at that time to have been regarded by painters as being chiefly employed in seduction. The series does not represent Morland's best characteristics as a painter, and is valuable chiefly as a curiosity. There is, however, something fine and characteristic in the style of the old farmer, the father of Letitia, evidently a study from life; and the scene where Letitia is dressing for a masquerade, to divert her thoughts, and her lover looking on admiringly, is good. Among the portraits of this room one of the most interesting is that of Miss Tyler, by Gainsborough, one of the works which illustrate Gainsborough's power of representing liveliness and sprightly character in a female portrait,—a power in which he was superior to Reynolds, perhaps. Miss Tyler is a seated profile figure, leaning back with her head on her hand, with a thin, eager, expressive face. The best pendant to this portrait in the room is Reynolds's beautifully tender and delicate painting of Lady Carysfort; the painting has faded a good deal in colour, unfortunately. Callcott's large painting, "Calm on the Medway," lent by the Earl of Durham, is very welcome; Callcott's really noble qualities as a painter of sea-pieces of this class have been allowed to be far too much forgotten and underrated. He does not achieve realism in his sea, certainly, but he gives the broad, calm repose of an expanse of still water, and ships floating on it, with true feeling for the poetry of the subject. Another remarkable landscape painting is Lord Wimborne's small Crome, one of those works, perhaps, which it is recorded that Crome would obligingly send to fill up a space in an exhibition. The subject is, as prosaically registered in the catalogue, "Sandy bank, with patches of furze and a clump of trees on the top; distant cloudy sky"; but out of this Crome makes a little poem, a harmonious and complete whole. The small painting of a dead hare by James Ward, lent by Mr. E. M. Ward, should not be overlooked; it is a masterpiece in its way. There are two paintings in this room possessing a definite historical interest, and one by Frank Hayman, of a cricket match on the old ground of the Marylebone Club, now part of Regent's Park, the players in short breeches and stockings, the umpires in cocked hats, the bats of an obsolete shape, slightly curved at the end; we shrewdly suspect, however, that the painter made a mistake in his representation of the manner of using the bat; we have little doubt that the ball must have been hit with the convex and not with the concave side of the bat, as he shows a man preparing to strike. The other work we referred to is Gainsborough's painting of the House of Commons in his day, and Fox addressing the House. Gainsborough painted an exquisite picture of the ladies of his day "Walking in the Mall," which was shown here at a previous loan exhibition; this work may be considered to aim at the same kind of interest, but the painter has not been so successful; it is a subject in which there was no beauty, it must depend for its interest on character, and this he has failed to impart, the members seem only so many heads with wigs on them. Fox is a portentous figure, as broad as he is high, in blue coat, and with an immense expanse of waistcoat spreading like a sail in front. Certainly if a man had the misfortune to be corpulent, the costume of that day was calculated to bring out the fact fully. In the same room a portrait by Hoppner of the Countess Carysfort should be noticed, and Opie's portrait of his mother, and Romney's of Mr. Thomas Grove, of Wiltshire, remarkable for the bright, alert expression and the fine painting of the face. Reynolds's "Nymph with Pan piping to her," is one of the more favourable examples of his nude studies as far as the figure is concerned, but there is a conventional simper about the face which puts to flight any "wood-nymph" association.

Gallery No. II., as usual at the loan exhibitions, contains the contributions belonging to the Dutch school, of which there are some exceptionally fine specimens. Of these, one of the most remarkable is Mrs. Hope's Jan Steen,—a large interior scene, entitled in the catalogue "A Lady offering Wine to a Gentleman," but which is a scene showing several figures grouped in a large room. Nothing could exceed the brilliancy and reality with which everything is rendered, from the gestures and attitudes of the figures to the smallest detail. A most characteristic figure is that of the man in a red hat, standing with his back to the fireplace, and looking round to the right: we should take him to be the master of the house; his look has a consciousness of mastery, coupled with a somewhat indolent indifference to what is going on. On the left Jan Steen leads our eye away from the comfortable group enjoying themselves in the dining-room, across a further room, through the window of which is seen a beautiful bit of evening sky. There almost seems to have been some kind of moral in the mind of the artist, for the chimneypiece bears a figure of Fortune, with an inscription, translated in the catalogue, "Lightly come, lightly go," somewhat after the manner of Hogarth. Anyhow it is a remarkable and most impressive picture, and seems all the more remarkable on comparing it with the painter's curiously frank portrait of himself and his wife, belonging to Mr. C. Butler. Was this really the painter of the work we have just been looking at?—this coarse boozy-looking man, full and heavy in the face, sitting with shut eyes and protruding under-lip, indulging in a smoke after dinner? A more vulgarly sensual and repelling figure it would be difficult to imagine, and the frankness of the representation makes it the more extraordinary. One thinks of the question asked about M. Parolles, when his soliloquy was overheard, "Is it possible he should know what he is, and be that he is?" Jan Steen's wife sits beside him, having evidently also had a very good dinner, and fallen into a doze, with her elbows on the table. Two children are blowing bubbles, and endeavouring to attract the attention of their parents to their achievements. No one can be surprised, after this portrait, at the coarse taste of many of Jan Steen's paintings. The wonder is that he should ever have risen above this, so far as to paint the other picture above described.

Earl Cowper's Teniers, "The Worship of Bacchus," is a specimen of one of those rather extended out-door scenes of which Teniers painted a few, one or two of which have been in previous loan exhibitions. Teniers does not show to the best advantage in this class of works; his landscapes are colourless and dirty-looking, and his groups of figures are scattered about in rather an unconnected manner. This one is clumsy in conception, too, from being half realism and half allegory; the two coopers working at barrels, on the realistic side, are the best figures in the picture. Mr. Angerstein's Vandyck, "Nymphs and Satyrs," is interesting as a specimen of Vandyck in an unusual class of subject, and the "nymph" on the right is a very fine nude study in regard to drawing and modelling. The large Vandyck portrait group of the Wentworth family is hardly a remarkable specimen of the artist. There is a splendid Gerard Dow, also contributed by Mrs. Hope, and a companion to one in the National Gallery. The two or three specimens of De Hooghe will also recall a well-known one in the National Gallery; they represent in at least one case the same scene and nearly the same personages, rather differently arranged. A Teniers interior, lent by Mr. Howard-Keeling, shows Teniers at his best, with splendid painting of what may be termed kitchen *bric-à-brac*. Terburg may be studied in two very fine, though curiously contrasted, pictures, the "Portrait of a Burgomaster," lent by Sir William Abdy, and the interior with soldiers and a trumpeter, lent by Mrs. Hope. The latter is fine in colour, the former a literally almost entirely colourless painting, the face of the portrait alone standing out from a dark background and above a dark dress; it may have looked clearer once than it does now; at present it seems a realistic portrait, somewhat ineffective as a picture. There are other works by Metzu, Maas, &c., very fine specimens of the respective painters; and the powerful sketch by Velasquez, "A Flute-player," should be noticed.

The large gallery contains a very varied collection. Earl Cowper's large Vandyck, the portraits of the Count of Nassau and family, occupies the top of the room, and is effectively contrasted with Reynolds's picture of the children of the first Viscount Melbourne. The Vandyck is all stateliness, almost stiffness, of demeanour in the figures; the Reynolds all grace and nature. Cotes's work of a similar class, the portraits of the daughters of Frederick Prince of Wales, lent by the Queen, is a good picture, and holds its place very respectably by the side of the great names in its neighbourhood. Earl Cowper's two Raffaelles, small Madonnas, belong to a class of Raffaelle paintings, which would not in themselves by any means explain the great place of the painter in the rolls of fame; they are graceful and pretty, but no more. The care with which the landscape and the distant building are painted in the first example (No. 148) may be remarked. There is a curious Parmigiano, "Portrait of a Virtuoso," in regard to which we beg to point out that the sculpture behind the figure is not a "bas-relief" as described in the catalogue, but an alto-relief, the nearest figure being, in fact, almost entirely detached from the ground. There should not be inaccuracies of this kind in a catalogue got up under the supervision of the Royal Academy. Paolo Veronese's "Venus and Mars" is a highly characteristic specimen of the painter; Mars being, of course, a Venetian "Signor," and Venus one of those large blonde women who seem to have been a characteristic product of the Italian Renaissance. The Andrea del Sarto, said to be a portrait of himself, is a very beautiful and refined painting, but we should share the doubt that has been expressed as to its being his own portrait; it does not look like the portrait of an artist. The two next important pictures in subject and composition on this side of the room are the Earl of Strafford's Titian ("Holy Family") and the Marquis of Ailesbury's Murillo ("Marriage at Cana in Galilee"). This latter is a good specimen of Murillo, his powers and his shortcomings; it is capitally painted in every sense, even to the jars in the foreground, and yet leaves the spectator impressed with the cleverness of the painter rather than with any higher feeling. The Titian is a grand work sadly cracked and faded, but still impressive in that peculiarly Titianic way which almost defies analysis; figures and landscape are blent in a rich, warm light; the landscape unusually fine, and the head of Zacharias on the right is grand.

At the end of the room the most noticeable work is Rembrandt's effective but ugly figure of a man, half-length, leaning forward to take his hat from where it is hanging. In expression and general effect this contains some of the best qualities of Rembrandt's painting, more so than his big equestrian figure of Turenne, which is rather commonplace, and, moreover, the horse is clumsy in action. Nicolas Poussin's "St. John at Patmos" is a fine, though coldly-painted landscape, with two small figures, looking the colder by contrast with the Claude near it, though the latter is hardly a first-class Claude. But turning to the fourth side of the room we come to the climax of the collection. In the matter of landscape there are, to begin with, a couple of Turners which soon make one forget Claude and Poussin. The first is a rather late one, "Kilgarran Castle," lent by Mr. Bischoffsheim; the other, Lord de Tabley's view of the lake at Tabley. Look at the solemn grandeur of the one, the deep reflections and rich tones of the water, the glint of distant light over the top of the rocks,—and then turn to the bright breezy freshness of the "Tabley Park," as distinct in tone and effect and manner as if another man had painted it. There is no more marked indication of the greatness and independence of Turner's genius than this variety of style and feeling, as compared with the Claudes and Poussins, who, with all their noble qualities, painted all their pictures alike. Then for the other contents of this wall of the gallery: here be portraits, indeed! There could not be a finer or more effective contrast than that furnished by Romney's "Mrs. Bankes" and Gainsborough's "Lady Ligonier," which are hung as pendants. Mrs. Bankes is almost a young girl, with the freshness and naïveté of youth still on her; in simple white dress, draped so as to indicate the figure a little, she leans looking upwards, with her elbow on a column draped with crimson, an embodiment of health, beauty, and simplicity. She is a blonde. "Lady Ligonier" is a brunette, an older woman, a woman of the world, with a face not handsome so much as expressive, and a piercing dark eye; she also leans on a pedestal, but is clothed in rich satin

with a many-coloured scarf depending from the waist. The painting is much more finished and much richer in colour in every way than the Romney; but in this case the two styles of execution seem exactly to suit the respective subjects. Reynolds has his triumph a few steps further on, in his painting of Colonel Acland and Lord Sydney shooting red deer, lent by the Earl of Carnarvon. This shows the full-length figure of two very fine young men in profile, and with most effective grouping and arrangement of colour; the combined action of the two reminds us a little of the harmony of action in some of the Parthenon frieze figures; the arrangement in regard to lighting and colour shows a carefully and effectively designed contrast. The darker figure, with short hair and aquiline features, is kept rather in the shade, the head relieved against dark foliage; the other head, with light hair blown out by the breeze and more *spirituel* features, is placed in the centre of a space of bright sky seen through the foliage. The effect is splendid; it is one of the finest works of Reynolds, and shows how he could make a really poetical picture, which impresses one like an ideal work, out of an order for the combined portrait of two young men who wished to be painted together as friends.* On the same wall is Wilkie's large and powerful portrait of the Earl of Kellie, lent by the Fife Court House Commissioners, containing also a large dog, painted *con amore* and with telling success. Romney's "Lord Ligonier" is also a fine and very interesting portrait, though it is thrown into a comparatively secondary place by the others we have named. Gainsborough's well-known painting formerly called "Cottage Children," but here exhibited as the "Wood Gatherers," forms part of the same remarkable group of paintings. The pictures on this one wall of Gallery III. would alone richly repay a visit to the exhibition.

As usual, Gallery IV. contains the specimens of early Italian art which have been lent, but these are neither so numerous nor so important as they have been in some previous years. There is, however, a remarkably-fine Pinturicchio, lent by Mr. Charles Butler,—the Virgin enthroned under an architectural canopy, with a distant landscape on either side, and in the immediate foreground flowers springing up with their blossoms brightly relieved against the dark ground or shadow beneath, in a manner which seems to suggest the source of some of the schemes of diaper decoration which we have seen revived and popularised recently. There is a strange, wild "Pietà" by Mantegna, in feeling reminding one of Albert Dürer; and there is one of the finest things Holbein ever painted, the portrait of Sir Thomas More, lent by the widow of the late Mr. Henry Huth, a painting in which it is difficult to say whether one admires more the splendid colour of the whole or the admirably real and characteristic expression of the features: we feel that we have here the man exactly as he lived and looked. There is a very interesting Titian in this room, the portraits of the infant daughters of Ferdinand of Austria. Titian has admirably discriminated the character of the three children, the youngest of whom is a child in the cradle; the dress of the two elder, white silk damask, is, from its want of colour, a difficulty in the painter's way, though in another sense it serves to give a marked character to the work. This child-picture, so full of character and interest, may be compared with that by Antonio More of the daughters of Philip II., a picture lent by the Queen. Here we have two children in rich costumes, but they are just that and nothing more; the dress is what attracts the attention, the faces are mere faces. There is in the same room a curious and interesting Giorgione containing some very fine painting, though unsatisfactory in general effect; it represents the immoral and cruel Malatesta di Rimini and his mistress, admonished for their sins by the Pope's legate. Apart from the artistic interest of the picture, it is curious to find a moral subject of this kind chosen by the volatile Giorgione, and equally curious to find the wicked and debauched Malatesta such a fine, quiet, high-browed, and thoroughly respectable-looking man; but it is very likely entirely true to fact in this respect. The union of the noblest and most polished manners with the most utterly vicious life was one of the characteristics of society in the days of the Renaissance. The figures are seated in a landscape, the distant portions of which are painted with a rather naïve indifference to perspective or scale; the lady, who does not impress one by her beauty, seems much affected by the legate's discourse, which Malatesta receives with calm and polite indifference. Possibly Giorgione's intention was to indicate the entire futility of sermons to convert a practised debauchee. Some fragments of marble sculpture make an effective foreground accessory. The picture is very interesting from more points of view than one. There are a good many other works of more or less interest in the same room, but we must stop. We congratulate the Royal Academy on having been able to get together so fine and interesting a collection, and so keep up so well the prestige of the valuable series of exhibitions which we are so much indebted to them for inaugurating.

* The prose side of the subject is rather sad: the two young men quarrelled before the picture was finished, and each repudiated the obligation to pay for it.

THE GROSVENOR GALLERY.

THE most noteworthy portion of the winter exhibition at the Grosvenor Gallery, which was opened this week, is the collection of decorative designs with which the east gallery is filled. This is, as those who know the leanings of the Grosvenor Gallery exhibitions would be prepared to find, nearly all of one school, and that a school, in some respects, open to much criticism; but it is, nevertheless, a remarkable collection, and of special interest, as exhibiting the decorative treatment of the figure in various forms.

The most important contributions are those of Mr. Burne Jones, whose peculiar genius almost leads him to work in a decorative style even in designs which do not specially profess to be intended as decorative. His usual style of design hardly needs conventionalising to bring it into harmony with the decorative purposes and processes; and the finest qualities of his art are exhibited in their best form in work of the class here illustrated, while some of its shortcomings do not appear so marked as in works which are less purely decorative in aim. The remarkable and almost wearying similarity of style and expression in his heads, those of female figures especially, which appears a serious defect in paintings that come at all near to the representation of life, may be regarded in decorative painting as merely the natural and not unsuitable result of the endeavour to treat the figure as a leading element in decoration, and, therefore, to eliminate naturalism from it.

Perhaps the finest, certainly the most striking and unusual of these works, is the circular painting that hangs at the top of the room, illustrating the verse from the prophet Daniel, "One like unto the Son of man came in the clouds of Heaven." The design represents the figure of Christ seated in the centre, and upborne by a multitude of angelic wings which form a background to the figure, and from amid which here and there emerges the face of an angelic being, half seen amid the plumes. The whole expanse of the painting, except the faces and the central figure, is of a purplish blue, that being the colour of the angelic plumage; and the success of the painter in achieving a fine and rich effect with this uniform and not very promising colour is remarkable, as well as the floating movement imparted to the whole. Near this is a design for a three-light stained glass window, figures in the two outer compartments, and a conventionalised representation of the pelican legend in the centre. We presume that some part of the surface treatment of the part which forms the background is not represented here exactly as it would be in execution in stained glass. The crimson border, and other portions, would probably have the surface diversified with diaper, as is shown in part of the centre compartment. This centre compartment is in colour and design a masterpiece of conventional treatment of objects (the pelican's nest, the trunk on which it rests, &c.) which if naturalistically treated would look very weak and ineffective in stained glass. Another glass design, two groups of angels for a window in Salisbury Cathedral, again produces a grand decorative effect in the treatment and colour of the masses of wings which overshadow and form a background to the figures. There are two other and larger stained-glass designs for a "Last Judgment" and a "Paradise." In the first of these the three figures in the centre, who produce and read from the book of Judgment, are very finely grouped, and again a very rich effect is produced by the wings behind them; but one begins to feel that this resource may be employed too often to retain all its effect. The figure of Justice with the balance above these is, it must be added, very undignified and weakly drawn; and in both of these large designs, while admiring the decorative effect of portions, we cannot but be struck with the puerile conception of the whole; the figures in the "Last Judgment" arising composedly out of holes in the ground, all with the same languid, expressionless faces, and the mystic "Lamb" in the "Paradise," on the top of a conical hill with conventional rivers flowing down it. Such an idea is only fit to amuse children.

Among Mr. Burne Jones's other contributions are two decorative studies of "A Sea-Nymph" and "A Wood-Nymph"; the figure in the former, which is really the "mermaid" of legendary lore, is very good, the fishy portion so effectively drawn and painted, and so well joined to the human trunk, that one is almost tempted to believe in the existence of such a being; but the conventionalised treatment of the sea is most unhappy, and may be best described as a series of rounded lumps or hillocks; it might be excusable in a design for a mosaic, or some such highly-artificial and unbending process, but at the best it is exceedingly ugly, and in no real sense decorative. The wood-nymph is a clever combination of the upper part of a figure with a foliage background; it is rather sickly in colour. "Cupid's Hunting-ground" is a composition in low relief in gesso, with much gilding, similar in effect to some other of the artist's works which we have seen in previous exhibitions in this Gallery; its decorative effect is excellent, but that is all its interest.

Mr. H. Holiday is a tolerably large contributor. Some of his designs for stained glass are excellent, among others his portrait figure of Archbishop Langton; and the three cartoons for figures of Theology, Music, and Painting are very good specimens of allegorical decorative figures. His stained-glass design for "Fortitude vanquishing Evil" is certainly effective, but very odd in appearance; "Fortitude" is a female figure entirely arranged in gilt armour of small scales, closely fitting the body; at first it looks merely like a naked figure covered with scales, and suggests the idea of a demon rather than of a "Virtue." Mr. Walter Crane exhibits a remarkably pretty and original design for a wall-paper founded on the story of the sleeping beauty, in which small figures carrying out this idea are worked into a diaper design of foliage, with very pretty effect. His design for needlework, "The Fates," is also admirable, and precisely suited to, and looking like, needle-work design. Two small drawings by Mr. Tadema, on tinted paper, studies of a "Mars and Venus" and "Bacchus and Silenus," are rather unusual specimens, to most exhibition-goers, of Mr. Tadema's work; they are, we need hardly say, admirable little bits of drawing: the manner in which the texture of the big rough earthenware bowl in the second-named design is conveyed to the eye is a notable example of this artist's power of representing the character of surface and material. Mr. Richmond's "Birth of Venus" is a very spirited design in illustration of this well-worn subject, which is represented in three works in the Gallery. Mr. Richmond's Venus is tossed up out of the sea, so to speak, by two fully-draped figures with very fine and energetic action; the Venus herself is pretty, but not a figure of the highest type; still she is an acceptable Venus. The contrast between this and each of the other two specimens of the same subject is amusing. A French painter, M. Dubufe, sends a bony figure kicking and smirking in a big shell, with exceedingly long and luxuriant red hair; while Mr. Spencer Stanhope, in a small painting in the corridor, shows us a thin-faced sad-looking woman, a sort of factory-girl undressed, with hair like oakum, stepping solemnly off the back of a Noah's-ark-looking dolphin on to the shore. The inventors of that lovely myth of the birth of Venus from the sea little dreamed what use it would be put to by prosaic painters in these latter days.

The cartoon of Mr. Poynter's fine mosaic of St. George is contributed, and there are other pieces of work worth looking at in a decorative point of view. The idea of getting together a collection of specially decorative work was a very good one, and has led to the exhibition of some very fine work, especially as regards colour and effect. At the same time one cannot avoid

the conclusion that the intellectual interest of a good many of these designs is not high, and that a much higher interest might be attained if with the same richness and force of colour were combined more variety of expression, and freedom and dignity of action, than we find in many of these examples. Mr. Poynter's well-known design, just referred to, serves, in fact, to point a moral in regard to this. It is not so rich or forcible in colour as some of Mr. Burne Jones's productions, but it is noble and masculine in conception,—the St. George is a figure we look upon with respect and with a human interest, as a fine embodiment of the idea of youthful chivalry, while too many of Mr. Burne Jones's figures can only be accepted or palliated in consideration of the fine colour effect for which they furnish the occasion. Among the decorative work may be mentioned a design by Mr. Millais, we understand an early production, for the tracery of a Gothic window, in which the curved lines are worked into the form of what may be called rudimentary angels, hand in hand, or rising to meet each other from either side of the window compartment; the design is, we must confess, quite un-architectural, but there is a poetic strain about it, reminding one a little of Blake.

The West Gallery contains a considerable collection of water-colours, of which the best in the main are those from foreign sources. One end of the room is devoted to works contributed by Liverpool artists; the average of power shown in them is not very high. Among the English contributions, one work by Mr. Parsons, "A By-way," a bit of quiet English country landscape, is remarkably fine. We have often called attention to the fine qualities of the water-colours contributed to the Grosvenor Gallery by this artist, but this is the best we have ever seen. There is also one of the very worst drawings we ever saw exhibited by an artist of such ability and originality as Mr. J. W. North is: this is called "An English country landscape," and contains about as bad a cathedral as could be seen, and a horse towing a boat, which is worse in its way than the cathedral. Between these two extremes are several very pleasant and some rather powerful bits of landscape-painting. Mr. Poynter's small work, "Battledore and Shuttlecock," is a beautiful little thing; and Mr. A. B. Donaldson's Lincoln landscapes should be specially looked at. But the water-colours as a whole are a rather mixed collection: the real interest of the exhibition lies in the decorative work in the east gallery.*

OFFICIAL CONDEMNATION OF THE SOUTH ESK BRIDGE.

IRON IN CONSTRUCTION.

THE doctrine that prevention is better than cure is one that Englishmen, as a rule, are remarkably slow to learn. If ever any signal and memorable lesson could have changed the character of a people, by leading them to set to work systematically to cure themselves of a great defect, it might have been thought that the battle of Hastings would have had that result. The annals of the Crimean campaign, however, showed that we still prefer learning our lessons under the most inconvenient and dangerous stress. We are glad to see one result of a more encouraging nature derived from that terrible lesson that was read to us on a stormy night twelve months ago. The Railway Department of the Board of Trade has so far learned wisdom from the collapse of the Tay Bridge, that Colonel Yolland has reported against the sufficiency of the viaduct over the South Esk river near Montrose, on the Arbroath and Montrose Railway, now in course of construction by the North British Railway Company. The question of the apportionment of responsibility between a railway company and the Board of Trade is one of considerable difficulty. But there can be no doubt that, whatever may be the best mode of dealing with such difficulties, the old maxim *Salus populi suprema lex* applies in such a case as this. It would be too much to be borne for us to have a second Tay Bridge catastrophe while the Board of Trade was waiting for further powers, or unable to act from a fear of responsibility. We, therefore, rejoice,—taking it for granted, be it observed, that a Royal Engineer officer is not reporting without due knowledge of the case,—to see that the Board of Trade inspector calls attention to the fact that a sufficiently strict supervision has not been exercised over this bridge while in process of erection. He gives his opinion that the foundations are insecure, a very grave charge. Not only so, he further challenges the general design, and objects to the nature of the material, viz., cast iron. Colonel Yolland deduces from the evidence taken before the Tay Bridge Court of Inquiry the maxim that cast-iron columns of small diameter cannot be relied on to support heavy rolling loads. The columns used in the South Esk Bridge are, the inspector says, of about the same diameter as those which broke on the Tay Bridge, and for fracture of which no special cause was assigned. Other evidence, moreover, is referred to to show that this was not an unusual occurrence. The fracture of one of these columns might possibly cause the viaduct to fall, and on that ground Col. Yolland recommends that cast-iron columns of the diameter used in this viaduct should not in future be sanctioned by the Board of Trade. As the result of examination of the bridge, the inspector recommended that it should be reconstructed, with substantial piers, for a double line of way, and that securities should be introduced to prevent a train from leaving the rails on the bridge.

We shall, perhaps, hear the other side of this question, and we offer no opinion of our own on the subject, as we have not seen the drawings of the bridge. But, as a general principle, we are disposed fully to agree with Colonel Yolland's view. It must be remembered that the iron age of building, on which we may be said to have entered during the last half-century, has dangers peculiar to itself. While metal offers to the architect a material that has enabled him to astonish the world by the audacity of his structures, it must be remembered that iron is not an ever-enduring material. The liability to rust is a source of danger which we are too apt to forget. It is hardly possible that even in such thoroughly substantial structures as the Menai tubes, the time should not sooner or later arrive when very grave questions will arise as to the resisting power of the iron. The use of cylinders for securing foundations may be of the utmost value, as in the instance of the Saltash Bridge. But there the cylinders were regarded by the designer as, after all, of a somewhat temporary character. A solid core of concrete and masonry was introduced into the Saltash cylinder, and the bridge would be secure even if the iron rusted away. But when, on the other hand, we have small cylindrical columns employed as an integral part of the permanent structure of a bridge, we consider that the edifice should be regarded with the utmost jealousy.

It must, however, be remembered that there are many railway bridges now standing in this country the piers of which are formed by clustered iron columns. One of the earliest of these was the bridge over the River Avon at Defford, near Worcester, on the Midland Railway. This pattern seems to have become a favourite one on that line. It is thus desirable, on the one hand, that certain limits of height, diameter, and thickness should be stated, beyond which the officer of the Board of Trade regards the proportion of that mode of structure as unsafe. On the other hand, Colonel Yolland's report should act as a reminder to the engineers of all lines on which columnar iron piers have been adopted, inducing them to give special survey to each work of the kind under their charge. Some of them, no doubt, will sooner or later require care. Let all concerned remember that prevention is better than cure.

The Builders' Ball. — The thirty-third annual ball is to take place at Willis's Rooms on Thursday, the 27th of January next. This ball, which is held in aid of the funds of the Builders' Benevolent Institution, is a very old-established affair, and brings together so many friends and supporters of the Institution, that we are glad to observe the hon. sec., Mr. F. W. Keeble, has been fortunate in securing the active interest of a number of well-known gentlemen who have accepted the office of steward. This Institution has done such a vast amount of good in affording pensions to many who have occupied good positions in life, but whose ill-fortune has reduced them in the world, that we cordially invite the attention of our readers to the announcement which appears in our advertising columns, where a list of the stewards and other particulars will be found.

THE TRADESCANTS' HOUSE AND GARDEN.

ON the 3rd of December last the Metropolitan Board of Works approved of an application on the part of Messrs. J. & J. Goodman for the approval of a plan for the formation of two new roads to lead out of the east side of South Lambeth-road, on the site of the house, with grounds, known as Turret House, and of the names Tradescant-street, S.E., and Walberswick-street, S.E., for the same.

These two streets will finally obliterate an extremely interesting vestige of Old London, although the names given them will serve to recal to some extent the associations connected with the site. The house called Turret House was the residence of the Tradescants, "gardeners to the Rose and Lily queen (*i.e.*, Henrietta Maria, consort of Charles I.), and the garden attached to the house upon which the new streets will be formed was the first botanical, or, as it was formerly called, "physic garden," established in this country.

The Tradescants, father and son, were very remarkable men,—the elder especially so,—and we are indebted to them for the so-called Ashmolean Museum at Oxford, which, although in itself of no great value nowadays, was of great service to science by leading to the formation of collections of a similar character by Sloane, Banks, Lever, and others, which finally resulted in the establishment of a national museum. To their efforts we also owe the introduction of a great number of new plants into this country,—a service which can be scarcely overrated, and which frequently involved a certain amount of personal risk. The introduction of foreign plants seems to have taken place very slowly for many years after the Conquest; for in the sixteenth century we find that only eighty-nine foreign woody plants were known to be cultivated in Britain, exclusive of two varieties of laurustinus. In the seventeenth century the example of Sir Walter Raleigh and Gerarde, whose "Herbal" was written in 1597, and was afterwards republished by Johnson in 1633, appears to have produced some effect, for about 131 woody plants were introduced. In the eighteenth century greater progress was made, for 445 trees and shrubs were added to our collection; and in the first thirty years of the nineteenth century no less than 699 were introduced. The efforts of the Tradescants, Ray, Compton, and Evelyn, in the seventeenth century, contributed greatly to these results.

The Tradescants were formerly supposed, on the vague authority of Antony à-Wood, to have been Dutchmen or Flemings; but it is satisfactory to our insular self-love to know that the researches of Dr. Hamel, of St. Petersburg, show that they were Englishmen, and that, in all probability, they were Warwickshire men. There is no record of the birth of the elder Tradescant, but it is certain from the parish register of Meopham that he resided there, and that the younger was born there in August 1608. The will of the younger Tradescant mentions the Tradescants of Walberswick, in Suffolk, in a manner which would seem to imply that they were his kinsmen.

The elder Tradescant made a journey to Archangel in 1618, in the suite of Sir Dudley Digges, the English Ambassador to Russia, and Dr. Hamel discovered in the Ashmolean Library a MS. diary of the voyage in the handwriting of the elder Tradescant. In the year 1629 he was appointed gardener to Charles I., having previously served the Lord Treasurer Salisbury, the Duke of Buckingham, and other noblemen in a similar capacity. He died in 1638, and was buried in Lambeth Church.

The younger Tradescant appears, from the admirable portrait-etching by Hollar, prefixed to the catalogue of the museum at South Lambeth, to have been a man of inferior intelligence to his father, who must have had a singularly handsome and intellectual face. Young Tradescant was childless, and seems to have come under the influence of Elias Ashmole, a crafty, scheming man, who pretended to a knowledge of astrology and the transmutation of metals. Their acquaintanceship began in 1650, and in 1657 the younger Tradescant is said to have made over the whole of his museum to Ashmole, the gift to take effect on the death of the former, which event happened on the 22nd of April, 1662. Tradescant, by his will dated the 4th May, 1661, left the museum to his wife, Hester, for life, and after her decease to the University of Oxford or Cambridge at her discretion, and

* We learn that the South Kensington Museum has purchased from the present exhibition at the Grosvenor Gallery the two chief decorative works contributed by Mr. W. J. Muckley.

makes no mention of Ashmole or the alleged deed of gift to him. Ashmole filed a bill in Chancery against the widow, setting up that the museum had been given to him by deed, but that he was unable to produce the document in consequence of Mrs. Tradescant, to whose custody he had committed it, having burned or otherwise destroyed it. This extraordinary explanation appears to have been accepted by the Court of Chancery, for, notwithstanding the non-production of the deed of gift (which, if executed, as alleged must have been set aside by the will of 1661), the Lord Chancellor, who was no other than Clarendon, made a decree in Ashmole's favour, subject to the trust for the defendant during her life. Poor Mrs. Tradescant signed an abject recantation of everything she had asserted against Ashmole, and was found drowned in the garden at South Lambeth on the 3rd of April, 1678.

Ashmole considerably increased the collection of curiosities accumulated by the Tradescants, chiefly by the addition of books and medals, and in 1682 presented it to the University of Oxford, having, as it would seem, carefully destroyed everything that could recal the memory of the two assiduous collectors to whom it owes its origin.

"John Tradescant the elder," says Dr. Hamel,* "was the man to whom is certainly due the no small merit of having founded the first museum for objects of natural history and art in England; he also promoted one of the first, and in his time, one of the best, botanical gardens. Both establishments were close to each other in South Lambeth at the time, not far from London. This place is now within the boundless metropolis, on the east side of the South Lambeth-road (improperly called the south side), and the buildings stand just opposite Spring-lane. The house containing the museum, which was called Tradescant's Ark, where the Tradescants, father and son, as well as Esther, widow of the latter, and afterwards Ashmole resided, has been so often changed in its internal arrangements and outward appearance, and moreover, so many additions have been made to it that at the present day it can no longer be discerned which were the apartments originally devoted to the museum, and which were inhabited. The whole now consists of two divisions—the older called Stamford House, is occupied by John Alexander Fulton, who has pepper ground close by, according to a patent method; and the other and newest division, Turret House, is inhabited by John Miles Thorne, proprietor of a brewery at Nine Elms."

It appears from the list given in Parkinson's "Garden of Pleasant Flowers," printed in 1656, that Tradescant the elder introduced a large number of plants into England, among others the greatest double yellow bastard daffodil, the Moly Homericum, Moly Indicum, Virginianian spiderwort (which is named after him), Gladiolus Byzantinus, white hellebore, knobbed mountain valerian, a new strawberry from Brussels,† plums from Turkey, and the Algerian apricot. "But," says Ducarel, "writing in 1772, "whether or no these plants bear his name at this period I can no more pretend to assert than that all the species therein mentioned are even now existing in our gardens."

Ducarel, in a letter to Dr. (afterwards Sir) Wm. Watson, upon the early cultivation of botany in England, says that "when his [Tradescant's] house at South Lambeth came into Ashmole's possession, he added a noble room to it, and adorned the chimney with his arms, impaling those of Sir William Dugdale (whose daughter was his third wife), where they remain to this day [but have now disappeared]. This house," he adds, "belongs at present (1772) to John Small, esq., who, about twelve years ago, purchased it of some of Ashmole's descendants, and my house, once a part of Tradescant's, is adjoining thereto," on the north.

"It were much to be wished," says Ducarel, in the same letter, "that the lovers of botany had visited this once-famous garden before, or at least in the beginning of the present century. But this seems to have been totally neglected till the year 1749, when yourself (Dr. Watson) and the late Dr. Mitchel favoured the Royal Society with the only account now extant of the remains of Tradescant's gardens." (Philosophical Transactions, vol. xlvi., p. 160.)

Dr. Watson was inclined to confine the extent of Tradescant's garden to that belonging to Small's house; but Ducarel was disposed to think, on account of the great number of plants and trees, that the garden extended much further. "Bounded," he says, "on the west by the road, on the east by a deep ditch (still extant), it certainly extended a good way towards the north, and took in not only my orchard and garden, but also those of two or three of my next neighbours; and some ancient mulberry-trees, planted in a line towards the north, seem to confirm this conjecture."

Dr. Watson's paper, read before the Royal Society on the 25th May, 1749, is very short, and contains but little information. The author remarks that "Mr. Tradescant's garden has now been many years totally neglected, and the house belonging to it empty and ruined, but that though the garden is covered with weeds, there remain among them manifest footsteps of its founder." He noticed two large arbutus trees,—the largest he had ever seen,—and in the orchard a tree of the *Rhamnus catharticus*, about 20 ft. high and near 1 ft. in diameter. Watson states that Tradescant first planted here the *Cupressus Americanus acaciæ foliis deciduis*, which was much esteemed, and at that time one of the great ornaments of the Duke of Argyll's garden at Witton. This statement is, however, contradicted by Dr. Hamel.

Edward Moore, the author of the "Gamester," lived at South Lambeth in the same house, according to Nichols, or near where the relict of the late Dr. Ducarel now (1786) resides, during all the time of his publishing "The World," a work in two volumes, small folio, printed by Dodsby, 1756. Moore died February 28th (Brayley says March 5th), 1757.

Dr. Ducarel informed Nichols that John Tradescant's house, though much altered of late years, was originally divided into two parts, the front thereof being that which was the doctor's own house, and the remainder making part of the offices of the great brick-house, built by Ashmole, which afterwards belonged to the late Mr. Small, and was in 1786 inhabited by Mr. T. White. Ducarel died May 29, 1785.

From this it would appear that the present house was built by Ashmole, between 1678, the date of Mrs. Tradescant's death, and 1692, the date of his own decease, but it has very few features which can be attributed to that period. Tradescant's tomb, in Lambeth churchyard, was erected by the widow of the younger Tradescant to the memory of the father and son. An illustration of this tomb will be found attached to Ducarel's letter to Dr. Watson, already referred to. It appears even in that time to have fallen into disrepair: the sculpture on the two ends seems to have been recognisable, but that on the two sides was so much decayed that Ducarel refers to a drawing preserved in the Pepysian Library for an explanation of the subjects. In 1773 part of the tomb appears to have been repaired. In 1853 the tomb, having still further deteriorated, was "entirely restored" after the fashion of that period, at a cost of about 100*l.*, or, in other words, was completely renewed. The original slab covering the tomb was removed to Turret House, and it would be interesting to know where it is at present. Some correspondence with reference to this restoration will be found in the *Builder* for 1854,* and among the letters is one with the initials "G. G., Southwark," which one has no difficulty in recognising as from the late Mr. George Gwilt, approving of the restoration.

The inscription on the tomb, which is given at length in "Old and New London," vol. vi., p. 446, is not the original inscription, the verses forming no part of the first memorial, but were preserved by Aubrey. This is important, and goes to prove how misleading these restorations may become.

There is an excellent view of Tradescant's house in Smith's "Antiquities of London and its Environs" (1791-1800), which shows that the house has undergone but little alteration during the present century. The interior of the house has been entirely modernised with the exception of the staircase and entrance-hall, which appear to be of oak, and are of the time of Charles II.

The iron gate and piers next the road are of later date, probably of the reign of George I.

The house inhabited by Ducarel and Moore was pulled down in the course of last year.

The original plates of Hollar's etchings of the portraits of the two Tradescants are preserved at the Ashmolean Museum at Oxford. John Nichols expresses, in his "History of Lambeth," the disappointment he felt in not being able to procure them for the illustration of his article upon the Tradescants,—an expression of feeling which is very remarkable in an antiquary, and shows the state of public opinion at that time with regard to works of art. Nichols states in a note that the plates had been lent on a former occasion to Dr. Ducarel, and seems to think that this gross abuse of trust justified him in expecting a similar favour. He was obliged to content himself with copies from the etchings, which are neatly done, but are necessarily very much inferior to the originals.

Writing in 1786, Nichols says that but few of Tradescants' rare plants were remaining at South Lambeth in 1718; only a very few horse-chestnut trees, some pine-trees and sumach-trees, phylereas, &c.; and at the entrance into the gate over the bridge of the moat were two vast ribs of a whale.

There were two fine cedars near the house; one of these, however, died last summer, and was removed; the other yet survives, and "spreads its broad green layers of shade," but must soon of necessity also disappear. These trees formed no portion of Tradescant's garden, the cedar not having been introduced into England until the reign of William III.

Tradescant's house and grounds were sold by auction, at the Auction Mart, Tokenhouse-yard, on the 22nd of June, 1880, by Messrs. Driver & Co., for 16,150*l.* The property is described as a very valuable freehold building property known as the Turret House Estate, South Lambeth-road, in the parish of St. Mary, Lambeth, comprising a comfortable family residence, with coach-house and stabling, lawns, pleasure-grounds, kitchen gardens, and paddocks, the whole containing about 4 acres 14 perches.

The abstract of title to the estate is stipulated by the conditions of sale to commence with certain indentures, dated the 11th and 12th of February, 1779, being a settlement on the marriage of Thomas Ponton and Martha Small, the latter presumably having been the daughter of the John Small alluded to by Ducarel, in whose possession the house was in 1772.

The property further appears to have belonged at one time to Mr. Francis Woodgate, who by his will, dated the 1st of June, 1853, devised all his property to his then wife, Mary Woodgate (who died in his lifetime), and afterwards to his son, Francis Woodgate.

The land-tax payable on the property is 1*l.* 16s., and the tithe-rent charge is 2*l.* 14s. 10d. a year.

* England and Russia, p. 243-4. By Dr. J. Von Hamel. 1854.

† Dr. Hamel has pointed out this must be a mistake for Borussia,—*i.e.*, Russia.

* See *Builder*, vol. xii., pp. 209, 212, 257.

THE PATENT LAWS, AND THEIR INFLUENCE ON TRADE.*

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THAT our trade is greatly influenced by our Patent Laws must be evident to every man of business, inasmuch as our prosperity as a nation depends on the success of our manufactures, which are largely the result of invention. Invention furnishes art with her materials, and, in the light of science, combines and improves those materials, clearing away the obstructions which impede the progress of art. The more the genius of invention is cherished in a country the more accurate and circumstantial will our knowledge become, and the better able shall we be to develope the great manufacturing resources of our country. Every discovery that is made will exalt our manufactures among their competitors, and cause them to flourish exactly in proportion as the blessings of philosophy and peace are spread over the world. Inventions are the natural consequences of freedom. The many and important inventions which have been made during the present century in England have contributed more to the greatness of our empire than all that was done during the previous five centuries. The railways, steamers, telegraphs, and our various industries, all sufficiently prove the truth of this statement; but, while rejoicing in our position as the chief manufacturing nation in the world, we cannot shut our eyes to the fact that we have powerful competitors for our trade and prosperity, and must, therefore, use our best endeavours to maintain that position. Railways, rolling-stock, and manufactures are indispensable to the colonies, so is our market for their products. England has had the honour and profit of

* Paper read by Mr. A. T. Walmisley, Assoc.-Mem. Inst. C.E., on December 23, 1880.

introducing most of the great inventions all over the world, and it behoves us seriously to consider the reason why we have not also had the honour and profit of the innumerable smaller inventions manufactured abroad. Why are our London shops and stores full of French and American goods which properly belong to the trade of this country? There was a time when Birmingham supplied nicknacks to the world; now France and the United States in some measure supply Birmingham. Great Britain is a manufacturing country, and America, comparatively speaking, is an agricultural one, yet the United States are enabled to outsell us in our own markets, on account of their labour-saving machinery, the invention of which is greatly encouraged and secured by their cheap patent law. Mr. Thomas Brassey, M.P., lecturing in January, 1878, on the comparative efficiency of English and foreign labour, maintained that we have much more to fear from the highly-paid labour of America, which brought labour-saving machinery and mechanical skill to such a high degree of perfection, than from the lower wages of the Continent of Europe. Referring to the success with which the Americans have competed with us in the making of small-arms and locomotives, he says,—"It would at first sight seem incredible that our engine-builders should have been beaten in a neutral market with no hostile tariff. Anyhow it would have been expected that, if we were beaten, it would have been by the Belgian or German makers, who command an ample supply of labour at comparatively low rates. The contrary, however, has happened, and it is a country where labour is paid at rates unknown in the Old World which has supplanted us. We have been conquered by the mechanical skill of the employer in devising labour-saving machinery, and by the industry and energy of the workmen, who, if they have earned high wages, have worked longer and more industriously than many among our own mechanics have been disposed to do."

Such is not only the opinion of so high an authority on the labour question as Mr. Brassey, but is also the opinion of all who have thoughtfully studied the subject. America is becoming our principal competitor in many things. We are, for example, losing our pianoforte trade, and this country is being rapidly stocked with pianofortes of New York manufacture. It is stated that a firm in New York have taken out twenty-one patents for improving their instruments, and scores of patented labour-saving tools are used in their production. Our watch and silk trades have been driven out of Coventry and Clerkenwell, while a new machine-made watch was being slowly developed in the United States, and what has occurred to our piano and watch trade is occurring slowly to many other manufactures to the partial ruin of our trade, wealth, and empire. When we are driven to purchase iron or steel tool implements or manufactured goods from abroad, there is evidently something wrong which a Board of Trade inquiry could discover, and there can be little doubt that there are many points in the United States system of encouraging and protecting invention which it would profit us not to envy but to emulate. The expediency of granting patents has been most ably shown in a paper read by Mr. F. J. Bramwell, Vice-chairman of the Society of Arts, in a paper read before that institution on December 2nd, 1874, in which he proves that those who urge that patents are mischievous to the State, hurtful to invention, obstructive to free trade, and that they raise unnecessarily the price of commodities, are greatly in error. It is quite true that the public depend upon competition to preserve just prices, and that commercial success depends more upon superior skill and workmanship than upon the monopoly of patents; but invention needs a stimulus, and an exclusive right for a definite period as a reward for discovery seems only just and politic. This advantage is secured to the inventor by a patent.

A patent is not a privilege given in exchange for an invention; it is, or ought to be, a contract entered into by the Government on behalf of the public, of the first part, and the inventor, of the second part, to protect the inventor, and to induce him to perfect and use, or bring into use, certain novelties or products for the mutual benefit of the public and himself. It has been proved that the public profit, most generally, many times more than the inventor; so that, if any privilege is granted, the inventor is making known his secret through the Government to the public. Of course, no patent is granted for a principle; it must be something saleable, and have a commercial value either chemically or mechanically. Patents are successful in proportion as they can be applied more or less universally. A patent by itself possesses no intrinsic value whatever. Its worth depends on the ability of the patentee to manufacture the invention in such a manner as to induce the public to purchase the same. We must combine simplicity and cheapness with efficiency if we would command the market, and do all we can to save time, labour, and expense. There are many works in which labour-saving tools might be most advantageously employed to facilitate their execution, the invention of which should be encouraged in every possible way. We have all to work for our living, and honour alone would be a poor recompense for labour; yet I believe the English character to be such, that patriotism would prevent any one who took an interest in his trade from keeping back any improvement likely to tend to the benefit of our fellowmen. This feeling has led many to consider it would be well to have no patent laws. It was the late Mr. Isambard Kingdom Brunel's opinion that the system of protecting inventions by means of letters patent was productive of immense evil, inasmuch as the secrecy required in working in order to conceal the process before the patent was granted, prevented an inventor seeking valuable advice which might either lead to an abandonment of the project or to its improvement in its weak points. The aggregate benefits to the real inventor were often small compared with the first cost, and the invention generally changed hands once or twice, or oftener, before coming into operation. It is certainly to be regretted that those who make money by patents are more often assignees than inventors, who draw an exorbitant profit by having purchased at a small price the result of another's brain, because the inventor has not the capital to manufacture the subject of his invention, or to bear the cost of litigation in defending his rights. His patent may also, after much expense, become completely worthless,—as, indeed, a large proportion of the patents annually taken out become,—or his invention may be improved by another. The majority of patents are more adaptations than original discoveries,—novel improvements combined with greater utility. A patent is in no case a grievance. No man is compelled to ask for a patent. It is voluntary, and without the hope of an exclusive privilege I am afraid we should lose many valuable inventions, unless all nations could unanimously agree to abandon patents altogether; but while other countries give protective rights we must do the same, only let us encourage every step towards facilitating the obtaining of patents. They should be as open, free, and cheap, as possible. Authors' works are protected for a long time at a small expense; why should not inventors be equally well treated, since their discoveries are generally the result of severe brain-study? We should give them at least twenty-one years' interest or copyright in their inventions. There is, however, this difference between industrial property and copyright, that patent right precludes the possibility of the same thought being carried out, at least for a time; but copyright does not. The Earl of Derby has so plainly drawn the distinction between patent-right and copyright in one of his speeches, when Lord Stanley in the House of Commons, that I feel I cannot do better than adopt his distinction. He held "the analogy to be a plausible one, but he thought it would not hold water on being looked into. The difference was simply this: he did not rest it on any abstract ground as to the distinction between invention and discovery, but on the obvious fact that no two men ever did or ever would write, independently of one another, exactly the same book; each book, be it good or bad, would stand alone; whereas it might happen that two or three men, quite independently of one another, would hit upon the same invention. That alone established a distinction between the two cases."

In *Austria-Hungary*, where the dual system of Government is established, each Ministry issues patents, and thus an inventor, desirous of securing an exclusive right to his invention, must provide himself with two patents, which are both granted on a single application, and on one payment of the fees. The laws of Austria-Hungary class inventions under three heads,—(1) Discoveries, *i.e.*, the introduction of the methods of production hitherto unknown in the country, and the resuscitation of methods once known but now forgotten and lost; but patents are not granted for the discovery of scientific principles, unless the latter are actually brought to bear upon production; (2) Inventions, *i.e.*, the creation of a new object by new means, or a new object by means already known, and of a known object by other means than those used for its production; one patent is never granted for two or more inventions, except in cases where both or all of them are to be used in the production of one and the same object; (3) Ameliorations, *i.e.*, any addition to an existing invention, which improves the quality or reduces the price of the product of such invention. Patents for ameliorations are granted for the part ameliorated, not for the whole invention. The duration of a patent cannot exceed fifteen years without the special consent of the Emperor, but patentees can procure for one or more years the renewal of patents originally granted for less than fifteen years. The fees upon patents, whether for natives or foreigners, are as follow:—

	Fl.	Kr.		£.
For the first five years	100	10	say	10
For the second five years	200	20	,,	20
For the third five years	400	40	,,	40
For fifteen years.....	Fl. 700			£70

An examination is made by the Ministry to see that the various legal forms are complied with, and that the description tallies with the invention. The applicant alone bears the consequences of any encroachment on the rights of others. The Government used to have the working of the invention examined by a Commission, who, in cases, found the working to be insufficient; but this practice is now abandoned, and, the same as in France and in Belgium, the patentee must now, in the event of litigation, be able to produce evidence of the working, in default of which he loses his patent. The patentee must make use of his patent within one year from the date of its issue, and not allow two consecutive years subsequently to elapse without working his invention, or the patent will lapse and become public property. The Ministry of Commerce is alone competent to decide on the invalidity or lapsing of patents.

In the *Grand Duchy of Baden*, patents are only granted for those things which are considered novel and peculiar. A patent may be refused if the invention does not appear to be generally useful. The Board of Trade has to decide on the written report, whether the patent is to be refused or not. Patents are limited to a period of three years. The stamp charged on petitions is fixed at 15 kr. (about 5d.), and the tax on a letter patent from 15 fl. to 500 fl. (1*l.* 5*s.* to 42*l.*), in addition to which the cost of the examination of the application for a patent must be reimbursed to the Treasury, generally 6 fl. (10*s.*) a day for the time spent by a technologist. A patent may be extended to a period not exceeding fifteen years by special petition.

In the *Grand Duchy of Hesse* it has always been a rule never to grant a patent for more than five years, and the holder has to pay, once for all, a stamp of 20 fl. (about 1*l.* 13*s.* 4*d.*) on his letter patent, whether the period is one year or longer, up to five years. Applications from countries where patents are not granted, such as Switzerland, Hamburg, Mecklenburg, &c., can not obtain a patent in Hesse.

In *Bavaria*, a sliding-scale of fees is adopted, and the produce of the fees is devoted to the encouragement of trade and industry. The term of a patent may be prolonged if it has been originally issued for a shorter period than fifteen years, but no privilege can ever be made to extend over a longer period than that of fifteen years from the date of its original issue. The fees vary from 25 florins for a term of one year, up to 275 gulden, or about 23*l.* for the maximum term of fifteen years.

In *Belgium*, patents are granted without previous examination either of the novelty or of the merit of the invention, and at the risk and peril of the inventor. The cost varies from 10 fr. for the first year, 20 fr. for the second, and so on with a yearly increase of 10 fr. payable in advance, and may last for a period of twenty years, but the time for which a patent of importation is granted must not exceed the period which the original patent has still to run in the countries where it was first delivered. A patent of invention is granted to the inventor who takes out his Belgian patent before obtaining letters patent in any other country. In case of modification of an invention a patent of improvement

conferring the same rights as a patent of invention may be obtained, the term of which shall end at the expiration of the original patent. A patent must be worked in Belgium within a year from the date of its having been worked or used in a foreign country, which term may be prolonged for a second year by special permission. The Government, however, seldom or never interfere as regards the working of any patent unless asked to do so.

In *Brazil*, patents are granted for periods of from five to twenty years, a longer term being concedable by law. The recipient must put his invention into practice within two years after the concession, unless this term shall have been extended by law. The patent becomes void if the discoverer obtain for the same invention a patent in a foreign country,—a provision copied from the French law of 1791, which is admitted to be contrary to all justice and economical principles. The patent is granted gratuitously, but the actual legitimate official expenses involved by the stamps and documents vary from 9*l.* to 14*l.* In 1869 it was proposed to divide patents into classes upon which should be paid a tax in proportion to the importance of the industry, not to exceed 30 milreis (3*l.* 5s.) in the first year, augmenting progressively 10 or 20 per cent. from year to year, and that certificates of modification should pay a tax of 50 milreis (about 5*l.* 10s.) once only.

In *Canada*, patents must be manufactured within two years of their grant, and manufacture must be continuous. The cost equals 12*l.* ($60), and the term fifteen years.

In *Chili*, the term of a patent cannot exceed ten years, the patentee paying a sum of 10*l.* into the Treasury as a contribution to the Museum in which the model of his invention is kept, together with a full explanation of the use and method of the article he has invented.

In *Columbia*, inventors in possession of a foreign patent may obtain one for the same invention on condition that its expiration shall coincide with that of the foreign patent. A fee of from 5 to 10 dollars (1*l.* to 2*l.*) is paid to the Government for each year of the duration of a patent, the term being not less than five nor more than twenty years. A patent lapses if during a whole year no use is made of the invention, unless it can be proved to be from accidents beyond the control of the patentee.

In *Denmark*, no laws have been passed on the subject of protection to inventions. The fee charged at the Ministry of Interior, according to custom, for the whole transactions is $17 (1*l.* 17s. 6d.), and the time occupied in the correspondence is about two months. The invention must be carried out within a year, and the patentee must continue to employ during the three four or five years for which the patent is granted. Imported inventions are generally protected for ten years, and in special cases fifteen years.

In *Greece*, a special Act is required to secure the patentee the rights he would claim, as they have no law affecting inventions.

In *Guatemala*, an inventor makes a clear and succinct description of his work before the Ministry of Interior, swearing that it is his own discovery, unknown in the country, and the Ministry of Interior appoints a commission to examine the invention. The application must be accompanied with drawings or models, as the case may require, and upon the originality of the invention being established the President of the Republic concedes the exclusive right for a term of years not exceeding ten years, previously to receiving which privilege, the person soliciting it must pay into the public treasury the sum of $50, which is applied for the preservation and support of the halls established in the Museum. Foreign inventions can be patented for a term not exceeding eight years. It is only possible to renew a patent under special circumstances provided such renewal is solicited at least six months before the expiration of the privilege.

In the Government of *Nicaragua* the inventor enjoys ten years of exclusive property, the improver seven, and the introducer five. These terms may be extended by the sovereign power on the proposition of the Government to fifteen, ten, and seven years, respectively.

The Republic of *Hayti* have no law or practice on patents, but are said to be generally in favour of the French law.

In *Italy* patents must be worked within two years, and working must not cease for any two years during the fifteen years or less for which a patent is granted. The fees increase from 2*l.* to 11*l.* 10s.

In the *Netherlands*, a patent is granted for five, ten, or fifteen years, and, in proportion to the time and importance of the invention or improvement, lower or higher charges are made which shall, however, never exceed the sum of 750 g., nor less than 150 g. A patent conferred for five or ten years, on the expiration of that period, may be prolonged in cases where very weighty reasons can be given; but it may not be extended to a longer period than fifteen years. The patent becomes void when no use is made of it for the space of two years after the patent is signed, unless with the special sanction of the Government; and also if the patentee, after securing his patent, shall obtain another patent in another country for the same object. Possessors of patents wishing to make over in whole or in part their rights for the benefit of others are bound to ask the king's approval beforehand, and also the sanction to extend any patent conferred for five or ten years must be signed by the king. The fees paid are,—for a patent of five years, 150 g.; for ten years, 300 g. or 400 g.; and 600 g. or 700 g. for fifteen years, in proportion to the importance of the invention or improvement.

In *Persia* no law exists respecting inventions.

In *Portugal* patents are granted for a term of years not exceeding fifteen; and a tax of 120,000 reis is exacted, equivalent to about 26*l.* sterling, out of which amount 75,000 reis, or 18*l.* 12s., are set apart for a fund for the advancement of industry, the remaining sum being absorbed in stamps and fees paid to Government. Exclusive right to import foreign patents is not granted; only the privilege for their manufacture in Portugal is guaranteed by a patent.

Germany has recently passed a patent law with fees paid annually, up to a limit of fifteen years, and patents must be worked within three years. The fees increase from 1*l.* 10s. for the first year to 35*l.* for the last year.

Prussia and some other states found their patent system on preliminary investigation, while others adopt the application system.

In *Alsace-Lorraine* we find the modern French system. Patents are never granted in Prussia for inventions of an artistic nature. The only excuse for a patent is that the invention shall have industrial value. They allow the patenting of foreign inventions. All applications are referred to the technical deputation for industrial matters under the control of the Ministry of Commerce. The duration is fixed by the Minister of Commerce, who usually fixes it at three years, but never less than six months. A patent which is near expiring may be, in some cases, renewed, but the entire period for which it can last must never exceed fifteen years. The cost is almost nominal. The application for a patent must be written on stamped paper of 5 sgr. (6d.). The answer of the Technical Deputation is given on stamped paper of 15 sgr. (1s. 6d.), and the patent itself, if granted, is liable to a stamp duty of 1 th. (3s.). There is no further tax or duty whatever.*

* To be concluded in our next.

ART-UNION OF LONDON.

THE LOSS OF "THE REVENGE."

IN the month of August, in the year 1591, England being at the time at war with Spain, a small English squadron, consisting of six men-of-war, lay at Florés, in the Azores. It was commanded by Lord Thomas Howard and Sir Richard Grenville. The vessel of the latter was a small three-masted ship with a crew of less than 200 men, and it happened, at the moment, that upwards of ninety of these were sick on shore, when suddenly appeared a pinnace "flying from far away," and reported fifty-three Spanish ships of war approaching. It would, of course, be madness for the six English ships to attempt to cope with such a force, and accordingly Lord Thomas Howard, with five ships, sailed away, leaving Sir Richard Grenville to follow so soon as he should have got his sick men aboard. Lord Thomas Howard, it appears, succeeded in escaping the notice of the Spanish fleet; but not so Sir Richard Grenville, who resolved, though with only 100 men able to work the ship and fight, to brave the brunt of the battle with the fifty-three Spanish monsters which came hugely towering all round. And so the fight went on all through the day and the whole night long, and in the morning there lay the little ship with her masts all shot away,—the mainsail hanging over the hull like a pall,—and the great Spanish vessels all in a ring, fearing to go too near lest the *Revenge* should be blown up and they be involved in her ruin. And this was no idle fear, for Sir Richard called out to his gunner to blow up and sink the ship.

"And the gunner said 'Ay, ay!'
But the seamen made reply,
'We have children, we have wives,
And the Lord hath spared our lives;
We will make the Spaniard promise, if we yield, to let us go;
We will live to fight again, and to strike another blow.'
And the lion there lay dying, and they yielded to the foe."

It is in these nervous words that the situation is described in a poem by Mr. Tennyson, which appeared in the *Nineteenth Century* for March, 1878. The Spanish admiral, struck by the gallant conduct of Sir Richard, sent off his barge to bring him on board his own ship.

It is this moment, when the barge is approaching the *Revenge* and the Spaniards are grouped around, like hunters about a wounded lion, that the artist, Mr. Oswald Brierly, has taken for embodying the scene in a very effective painting. The Art-Union commissioned Mr. Arthur Willmore to engrave a plate from it, in pure line, and we have received a proof of the result, which will be the presentation-plate of this society for the current year. Marine subjects have always a great charm for the English people, whose hearts, in the words of the report of the Council, "ever warm to any story of the sea, on which so many of them have, for centuries, found a home, and many, alas! a grave."

This is a powerfully-designed scene; the contrast between the little *Revenge* and the towering forms of the Spanish galleons is well rendered, and the background of calm sea and misty headland, and cloud-flecked bright sky, are not deficient in poetical feeling. We have been informed that the majority of the agents of the Society report this to be one of the most popular subjects yet engraved, and, if the promise of an improved state of trade, which the returns just announced seem to indicate, be realised, a large subscription for the current year may be anticipated.

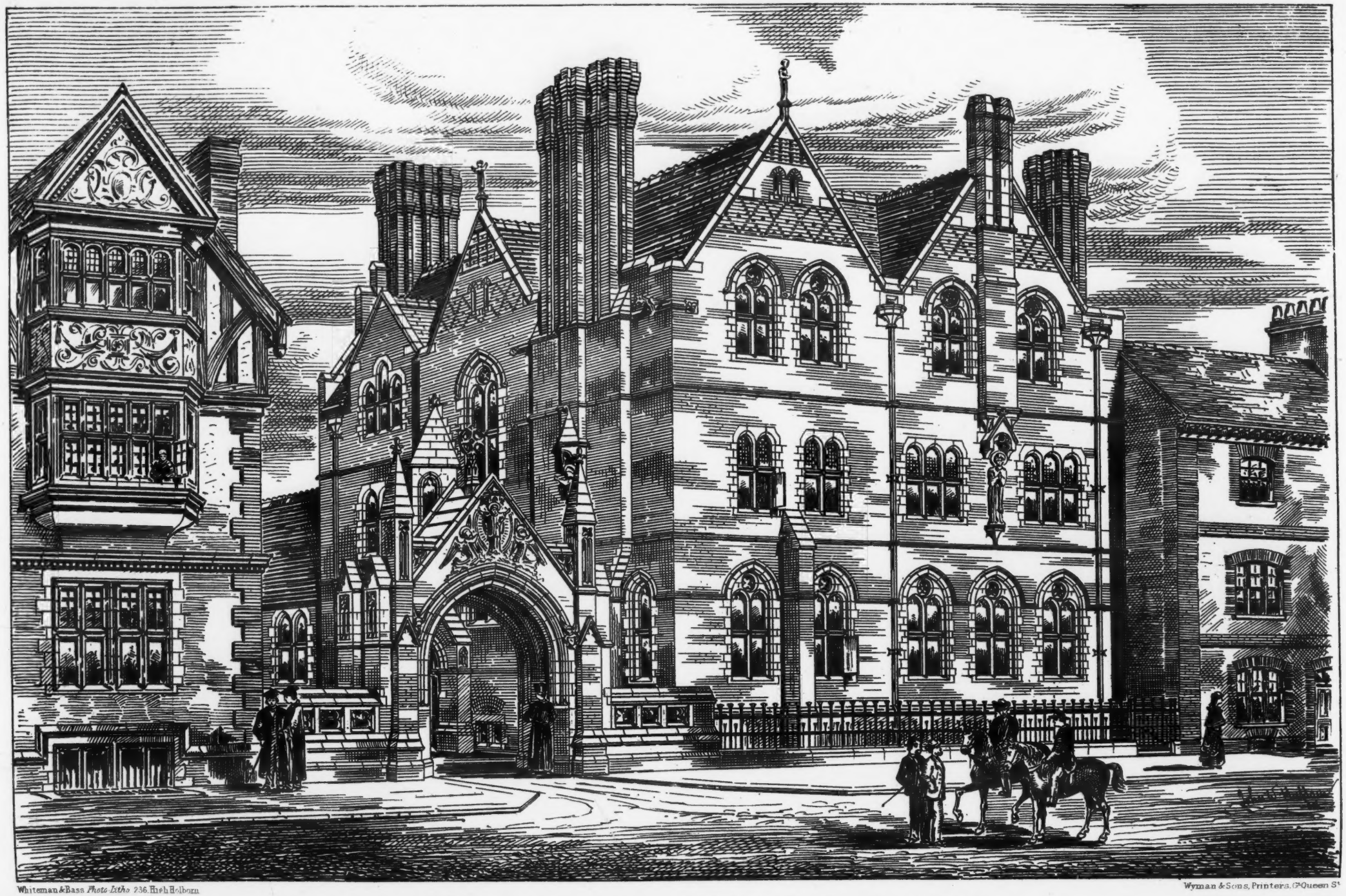
THE PRESBYTERY OF ST. ALOYSIUS, OXFORD.

THE view illustrates the residence erected for the clergy of the Roman Catholic Church of St. Aloysius at Oxford. The church is situated at the north end of St. Giles's-street, standing somewhat back from the street, and the presbytery, though not directly in front, is placed between it and the street, arranged so that the entrance archway, when built, will be central with the west doorway of the church. The accommodation is shown by the accompanying plans, the ground-floor being appropriated to the general living-rooms, and having a large room provided at the back for parish meetings, entertainments, &c.; the basement to the household and domestic arrangements; and the first and second floors to the private rooms of the clergy, each room being a combination of sitting-room and bedroom by means of a curtained recess for the bed and toilet arrangements. The materials used are local white bricks, with Box stone dressings, and the works have been ably executed by Messrs. Wyatt, builders, of Oxford; the carving is by Mr. MacCulloch, Camberwell, London; Mr. Wilkinson, of Oxford, being the architect.

COLOGNE CATHEDRAL RESTORED.

THE view in our present number completes what we think may be termed the interesting series of illustrations which we have given of Cologne Cathedral in its restored state. The letterpress accompanying them, moreover, includes observations as regards the designers of the building which ought to induce some discussion in Germany. The present view shows the south transept and the towers.

Derby Coffee and Cocoa House Company. The third and central house of this company was opened on the 21st ult., by Lord Edward Cavendish and the Right Hon. Sir W. Harcourt. The house is well situated, and a good business is expected. It originally consisted of a chemist's shop and six good rooms over, and the whole has been altered, fitted, and decorated. The work has been done by Mr. Bakewell, of Derby, Mr. Councillor Wills, of Derby, being the architect.



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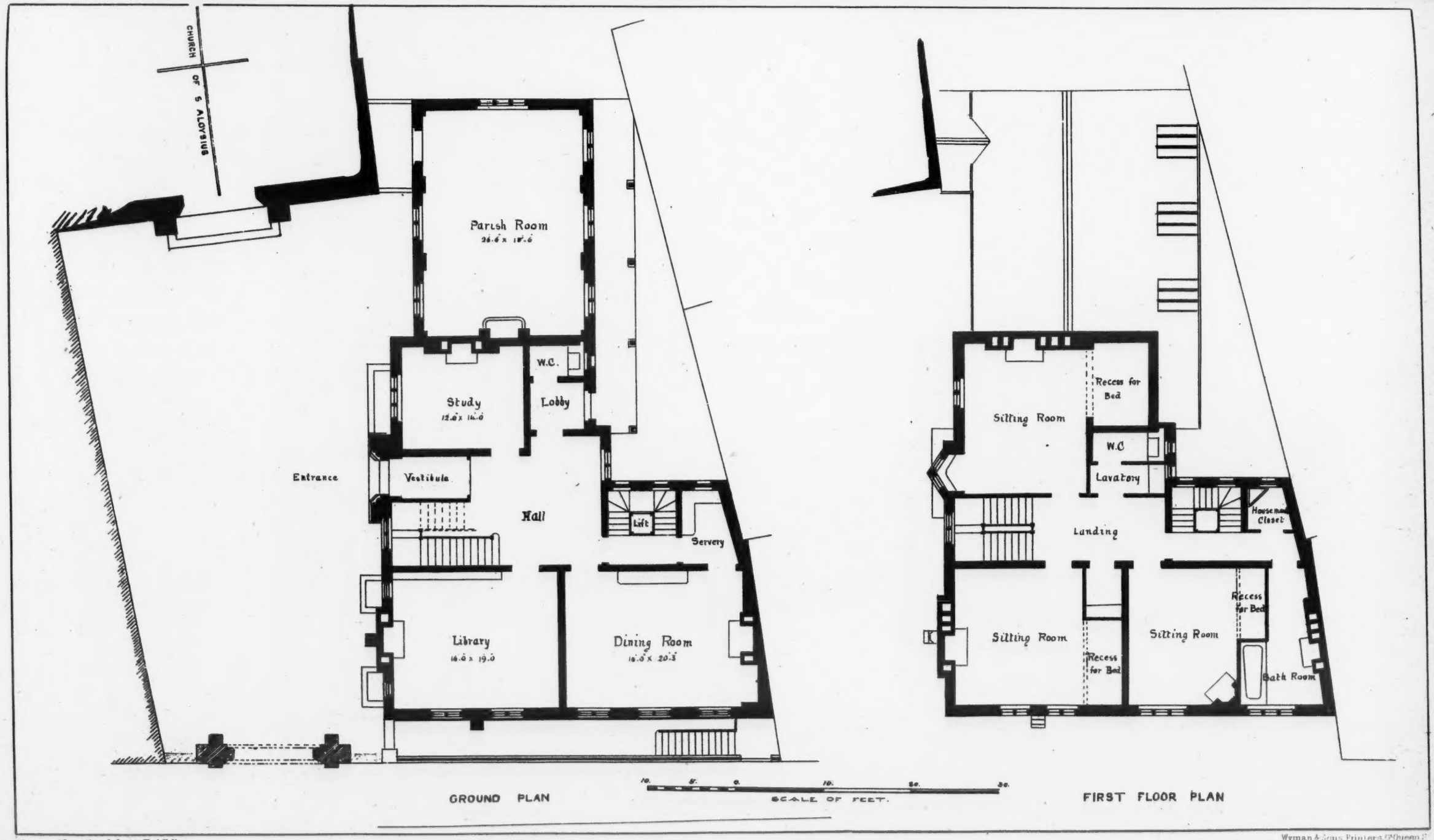
THE PRESBYTERY OF ST. ALOYSIUS, OXFORD.——Mr. Wilkinson, Architect.

THE PRESBYTERY OF ST. ALOYSIUS, OXFORD.—MR. WILKINSON, ARCHITECT.



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THE PRESBYTERY OF ST. ALOYSIUS, OXFORD.

COLOGNE CATHEDRAL, RESTORED.——View of South Side.

STATUE OF DAVID D'ANGERS, ON MONUMENT ERECTED IN ANGERS.——M. LOUIS NOËL, SCULPTOR.

MONUMENT TO DAVID D'ANGERS.

WE mentioned at the end of October last the public rejoicings, illuminations, and torch-light processions in Angers (France), to celebrate the unveiling of a monument in honour of the sculptor David.* This took place on the 24th of that month, and M. Barthélemy de Sainte-Hilaire pronounced on that occasion a remarkable discourse setting forth the merits of David alike as a patriot and an artist. We now give a view of the statue that crowns the monument. It is the work of M. Louis Noël, sculptor, and conveys forcibly the well-known character of the man. Men of all shades, whether friends of the Republic, for the establishment of which he fought, or not, have joined to do honour to the memory of David d'Angers, the sculptor.

* See vol. XXIX., p. 523.

CULTIVATION OF LAND ABROAD AND AT HOME.

WE have all long since come to understand what is meant by the expression, "questions of the day" applied to certain movements of opinion urging action on some fixed and well-determined point, the details of which, however, are found on examination to require serious study. The consideration of the important

question of hygiene has long since entered this phase. The question of the agricultural treatment of our rich country may be fairly said to stand in a similar position; in our cities the consideration of the hygienic treatment of our vast populations in the provinces, the scientific treatment of our vast stretches of productive land, these are questions which appeal to a great mass of the public. In the latter case, the condition of our agriculture it is clearly seen by the more intelligent that the sole possibility of any change for the better can be expected from a more scientific management of the land. We in England, or rather our farmers, are commencing to realise this fact, though it has long met with obstinate resistance, a resistance the nature of which is admirably shown us by the views placed by Lord Beaconsfield, in his latest romance, in the mouth of old Farmer Thornberry, concerning Lord Brougham's action in favour of a knowledge of chemistry being necessary for the cultivation of the soil. Enormous as are the advances that have been made in the science of agriculture since those days, hard upon half a century ago, it is still felt,—and no less, perhaps more, abroad than even at home,—that Europe must advance still further in this direction in order not merely to compete, but to exist with agricultural rivals in distant parts of the world. From Italy only a few days since we heard this cry from an influential quarter. On the Continent, indeed, the question has long since entered a practical stage, and no fact proves more the manner in which its importance has been grasped than the success of the Agricultural Institute founded in Paris some four years since, and which only a short time ago commenced its winter term. The well-considered and varied course of lectures delivered at the Institut National Agronomique is frequented by a continually increasing number of pupils, a fact which is in itself sufficiently significant. The Institute has for chief object,—we quote from the official programme, which at present lies before us,—"To promote agricultural progress, and to raise the level of the science in its relations with all the branches of production, animal and vegetable," by forming agriculturists possessing the scientific acquaintance necessary for the best cultivation of the land, of forming in addition a body of well-trained officials under the control of the Minister of Agriculture and Commerce,—an important department of the French Government. Further, of training special professors for the national schools in the provinces. The Institute is composed of a superior school, "*École des hautes études*," situated in Paris, and of a "school of application," established at the farm of Vincennes, but a short distance from the capital, and intended specially for purposes of experiment and research.* A list of the subjects of the lectures, delivered in every case by the most able professors, suffices to show the serious nature of the education afforded. The pupils are in addition trained in preparing plans, levelling, and land surveying, in drainage and irrigation. It can be seen that no branch of knowledge connected with agriculture has been neglected in order to render the cultivators of the future complete and armed on every point. The studies last two years, at the expiration of which time a diploma or a certificate is given to those pupils who are judged worthy. During the holidays in the middle of the year the directors of the Institute provide for those pupils whose parents are not agriculturists the means of passing two months at least on what we understand as a "model farm," either in France or abroad; on the opening of the next term each pupil is called upon to present a journal and a detailed account of his occupations and studies during the holidays. The report of the directors, published not long since, shows a highly satisfactory state of affairs during the four years that the Institute has been in existence. A number of the pupils have taken important official places in the provinces, many others naturally returning to their property, there to apply the results of their education. As an admirable complement to their curriculum, every year the two pupils whose names stand first on the examination-list, receive, at the charge of the State, a "complementary mission for purposes of study," either in France or abroad; this mission lasts three years. A pupil of the Institute, M. Grosjean, who visited England under these conditions in 1879, has within a few days past left for the United States, where he will remain two years. His report on the state of our agriculture has supplied to the French much valuable information, and his special study of the Land Improvement Companies which exist in our country will doubtless lead to some excellent results; for France in this respect, no less than ourselves, is suffering cruelly. It is felt that the only hope of staving off the continuation or recurrence of the existing crisis lies in the intelligent and scientific study of agriculture. The French have taken to themselves the efforts we have been making in this direction; let us, on our side, learn from the example of our neighbours. Not only may our vast tracts of waste land, by proper treatment, be reclaimed, but made highly profitable, while the soil under cultivation may be made doubly and trebly productive, and an unexpected and immense source of revenue thus added to the national wealth.

* It was to institutions of this nature, if not to this very establishment, that Mr. Mundella was referring when he said, some time since, how he had positively trembled for English agriculture when he saw the advanced state of the science abroad,—a fear which, however, on attending the classes of the Leeds Institute, he rejoiced had been greatly allayed.

THE LONDON AND NORTH-WESTERN RAILWAY.

IN a recent number we gave a sketch of the extent and resources of the Midland Railway, one of the largest of the many great results of English enterprise. We now propose to lay before our readers a brief account of another of those wonderful creations of engineering skill which have rendered our modern England a worthy successor to the road-making fame of ancient Rome.

Though nominally inferior, in point of mileage, to one other English railway,—the Great Western,—and to several of the great foreign lines, yet, as regards the amount of its capital, the importance of the places connected by it, its vast passenger, goods, and postal traffic, and the numerous engineering difficulties surmounted in its construction, there is probably no other railway in the world that can at all compare with the London and North-Western.

We have said "*nominally* inferior in point of mileage," as, though credited with between 1,700 and 1,800 miles only, as against the 2,000 and odd of the Great Western and several Continental lines, yet we believe we are correct in stating that, including the extra lines laid down over a large portion of their system, and the vast number of sidings, the London and North-Western Company maintain the astonishing amount of no less than 10,000 miles of rail.

With this extent of roadway, stretching from London in the south to Carlisle in the north, from Holyhead in the west to Cambridge in the east, embracing the most varied districts of England, agricultural, pastoral, mining, and manufacturing, and affording in almost all cases the shortest line of communication between the capital and other important places on its system, including not only such vast centres as Liverpool, Manchester, Birmingham, but also the whole territories of Wales, Ireland, and Scotland, it will be of some interest to inquire what are the resources necessary for the conduct of so enormous a traffic as that passing over the rails of this great company, what are the nature and amount of that traffic, and the principal works to which it has given rise.

The system now known as the London and North-Western has been gradually formed by the union of the London and Birmingham, the Liverpool and Manchester, and Grand Junction Railways, to which three of our earliest constructed lines have been from time to time added the Chester and Holyhead, the Lancaster and Carlisle, and numerous other smaller undertakings. The capital embarked in this vast aggregate amounts to no less a sum than one hundred millions, whilst its average weekly receipts fall little short of 200,000*l*. The company annually carry nearly 50,000,000 passengers, and between 30,000,000 and 40,000,000 tons of merchandise and minerals, in the conveyance of which their trains run 25,000,000 miles; whilst there are employed upwards of 2,000 engines, 3,000 carriages, and nearly 50,000 goods-wagons and other vehicles of various descriptions, to say nothing of a magnificent fleet of steamers, a stud of between 2,000 and 3,000 horses, and last, though not least, an army of 40,000 men.

During the past few years their traffic has increased to such an extent that the company have found it necessary to lay down additional lines of rails and to rebuild and enlarge the stations on various parts of the system. By this means not only are greater facilities obtained for dealing with the traffic, but by keeping the passenger and goods trains as far as possible on different lines, the risk of accidents is greatly diminished. There is now practically a quadruple set of rails the whole way from London to Crewe, a distance of nearly 160 miles, as follows: From London to Roade, four lines; from Roade to Rugby, the original main line *vid* Blisworth and the new deviation *vid* Northampton; from Rugby to Stafford, the line through Birmingham and that commonly called the Trent Valley line through Tamworth; and, finally, four parallel lines from Stafford to Crewe. There is also a third line on the Trent Valley section between Rugby and Nuneaton.

The fact of the London and North-Western being the first great trunk line from London to the Midland and Northern counties, and the facilities afforded by its unrivalled position, have always caused it to be the principal agent in the conveyance of the mails for the districts through which it passes. We thus find it in receipt of some 150,000*l*. a year from Government for its services in connexion with the Post Office,—a sum nearly as great as that paid to the Great Western, the Great Northern, and Midland companies all put together. Many tons of mails daily leave and arrive at the Euston-square terminus, carried chiefly by the well-known Irish Mail to and from Holyhead and the special Limited Mail for the North and Scotland, these trains being amongst the fastest, best appointed, and most punctual in the world. The bulk of the correspondence with the United States is also conveyed by the Irish mail-trains and boats *vid* Holyhead and Dublin to Queenstown, at which port it is placed on board the steamers for New York,—a saving of many hours being thus effected as compared with the long sea route from Liverpool. The homeward mails from America are similarly handled.

In connexion with this service we may here mention the astonishing express journey from Queenstown to London accomplished on the occasion of the arrival of the Government despatches relative to the *Trent* affair, at the time of the American civil war, that portion of it between Holyhead and Euston being probably the most wonderful feat ever performed on any railway. The despatches were brought from America by the *Europa* and transferred at Queenstown to a small steamer for conveyance to Cork, and thirteen minutes after their arrival there were forwarded by special train to Dublin, the 166 miles from Cork to Dublin being accomplished in four hours and three minutes. The transit through Dublin and thence to Kingstown occupied thirty-six minutes, and four minutes after reaching Kingstown the despatches were on board the Irish mail-boat *Ulster* on the way to Holyhead. The passage across the Channel, nearly seventy miles, was accomplished in three hours and forty-seven minutes in most unfavourable weather, and then began the crowning marvel of this wonderful journey. The special express train provided by the London and North-Western Company ran from Holyhead to Stafford, 131 miles, in 144 minutes, being at the rate of fifty-four miles an hour, without a single stoppage, and from Stafford to London, 133 miles, at a slightly lower speed; the entire distance from Holyhead to Euston, 264 miles, being performed in exactly five hours, at an average speed of about fifty-three miles an hour. By taking up water for the engine from the troughs laid down for that purpose, the express ran this long distance with one stoppage only. The 515 miles from Queenstown to London, including all stoppages, occupied fifteen hours.

To some of our readers the mode of watering the engine whilst in motion may be unfamiliar. This ingenious contrivance, the invention of the late Mr. Ramsbottom, chief mechanical engineer to the company, is intended to enable trains to run a great distance without stopping, and also to allow of the employment of smaller and lighter tenders than would otherwise be required, thus in some degree saving the great wear and tear of the rails caused by the enormous weight of the ordinary type of tender. A long narrow iron tank or trough is laid between the rails of the up and down lines respectively, and kept supplied with a full allowance of water; on reaching this trough, one end of a tube underneath the tender enters the water, which is then forced up it into the tender's tank by the speed at which the train is

travelling. This device is in use on the London and North-Western Railway only, other lines over which trains run great distances without stopping, as, for instance, the seventy-seven miles from London to Swindon on the Great Western, and the 107 miles from London to Grantham on the Great Northern, being obliged to employ engines and tenders of far heavier build and consequently far greater "track-crushing" propensities.

Space fails us for enlarging on the many stupendous specimens of engineering to be met with on the London and North-Western, and we can do no more than mention a few of the most remarkable, — the Kilsby Tunnel near Rugby, 2,435 yards in length; the Standedge Tunnel, of 5,300 yards, between Manchester and Huddersfield; the Britannia Tubular Bridge over the Menai Straits; the new harbour works at Holyhead; and the splendid lattice-girder bridge over the Mersey at Runcorn. Nor can we make more than a passing allusion to the company's wonderful locomotive and steel works at Crewe which cover an area of nearly 100 acres and form one of the sights of manufacturing England, nor to the extensive carriage and wagon works at Wolverton and Earlestown, at the latter of which a new wagon is turned out complete every thirty minutes. To such of our readers as may be interested in the construction, maintenance, and working of a great railway system, we can give no better advice than to bid them take as their subject of inspection and inquiry the London and North-Western.

THE ANNEXE TO THE CHARING CROSS HOTEL.

THIS lofty but otherwise unpretentious building, architecturally speaking, is nearing completion. More than three years ago we gave some particulars of the structure, which was then recently commenced, but the Mansard roofs then contemplated have been replaced by a flat roof of very excellent construction and material. It is between six and seven thousand square feet in area, and the covering is of asphalte, three-quarters of an inch thick, laid down by Claridge's Patent Asphalte Company, on the surface presented by a bed of concrete, carried by and embedding rolled iron joists, on Dawnay's system. The building is six stories high above the ground-floor, and the roof, which is surrounded by a massive Portland stone coping carrying an iron railing, would afford a very pleasant promenade for smokers on summer evenings. The whole of the floors are fire-proof, consisting of rolled iron joists and concrete, on the same principle as the roof, the only difference being that the latter is covered with asphalte. The annexe is connected with the main building by a light and not unhandsome iron bridge crossing Villiers-street, but has also a separate staircase and entrance of its own. A notable thing about this staircase is that it is fire-proof. The steps are of Portland cement, mixed with a little sand, and cast in moulds so as to give a moulded soffit, which has a very good effect. This is, we believe, the idea of the architect, Mr. John Fish. The treads, we should add, are covered with slabs of Portland stone, and the risers with red tiles. Externally the building is of yellow brickwork, with Portland cement dressings to the windows,—for the most part, at least,—for, as will be seen by the passer by, the dressings of the windows of the ground-floor, up to the level of the springing of the arches, are of stone, and we are informed that, but for the intervention of the masons' strike, the whole of the façade would have been executed in Portland stone,—no inconsiderable job. One or two features, such as the coping and the cornice, have, however, been executed in stone. The contractors are Messrs. Lucas Brothers, and it is needless to say that the materials and workmanship are good. Mr. George Baker has acted as general foreman to the contractors. The annexe, the cost of which will be about 40,000*l.*, will contain about 130 rooms, exclusive of public-house, house-keeper's apartments, and basement.

Buda-Pest, Hungary.—The erection here of some large Government buildings is contemplated, and designs will probably be invited in competition. Some discussion is taking place as to the desirability or otherwise of making the competition international.

AN IMPROVED MODE OF WARMING AND VENTILATING.

AN apparatus which provides for the admission of fresh warm air, instead of cold, into buildings, is manufactured by J. Weeks & Co., of King's-road, Chelsea, and is known as "Weeks's one-boiler low-pressure apparatus." The boiler is tubular, and the connexions are so arranged that any number of rooms, from two or three up to fifty or more, can be warmed, and the whole or any number worked together or separately as required.

To avoid the expense of excavating channels, building walls, and casting gratings to cover the pipes, they adopt the plan, when a new building has to be erected, of recommending that the window-recesses, instead of starting from the line of the window-sills as usual, should begin at the floor level, and that the recess between the level of the sill and the floor should be filled with a coil of pipes. The above sketches illustrate this.

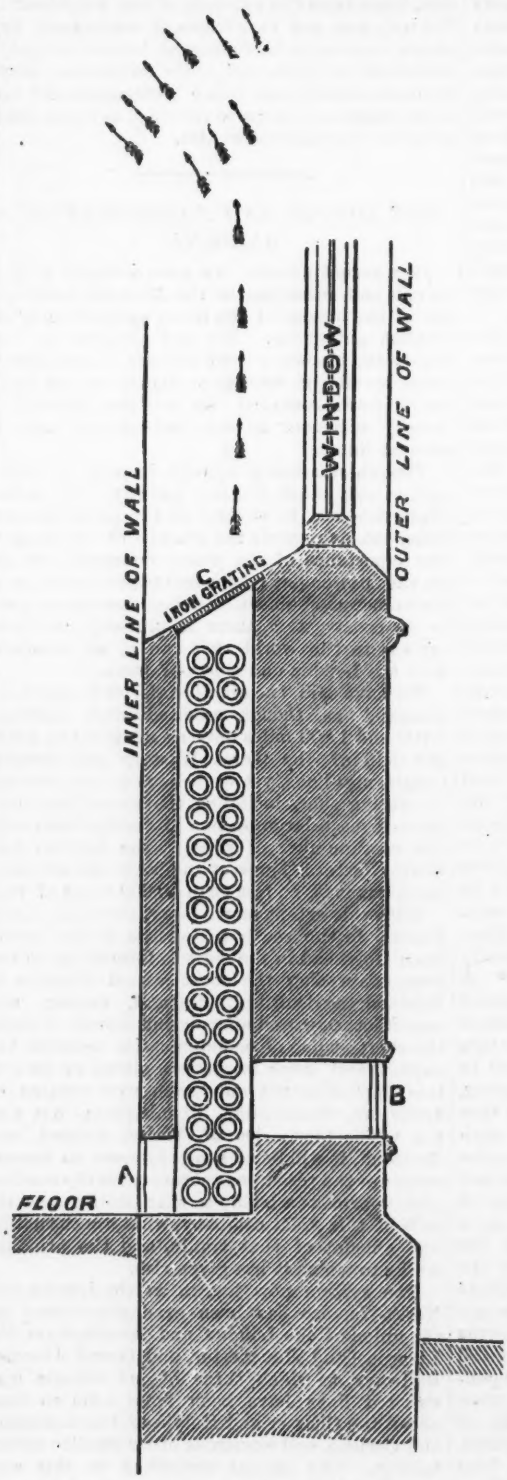


Fig. 1.—Section through Church Wall at Window.

Fig. 1 shows a section through the outer wall of a church, at a window. It will be seen that the wall below the window-sill is built hollow, and that the recess thus formed is filled with hot-water pipes. The opening at the top may or may not be covered by an iron grating, C. A is an opening into the church, closed at pleasure by a wooden flap. B is an iron ventilator just above the level of opening A, also closed at pleasure by a flap. This arrangement serves as a warming apparatus and ventilating apparatus combined; thus, in the summer, when the warming apparatus is not in use, the flap A is closed and the ventilator B remains open. The result is that cool fresh air enters at B, passes up the cavity, through the grating C into the church above the heads of the congregation. In addition to this, the current of air would naturally follow the direction acquired in passing through the cavity for some height in the church, as shown by the arrows, and then disperse into a number of small currents and descend imperceptibly; thus avoiding the draughts so common and distressing in buildings devoted to public worship. In the winter, when the warming apparatus is in use, the flap A being still closed and the ventilator B open, the result would be the same, except that the fresh air would be *warmed* by contact with the hot-water pipes before entering the church. In very severe weather, or while the heat is being got up before the arrival of the congregation, the ventilator B may be closed and the flap A opened. The result, then, is that the air in the church passes into the cavity at A through the coil, out into the church at grating C, and, this process being continued, the church becomes warmed with great rapidity.

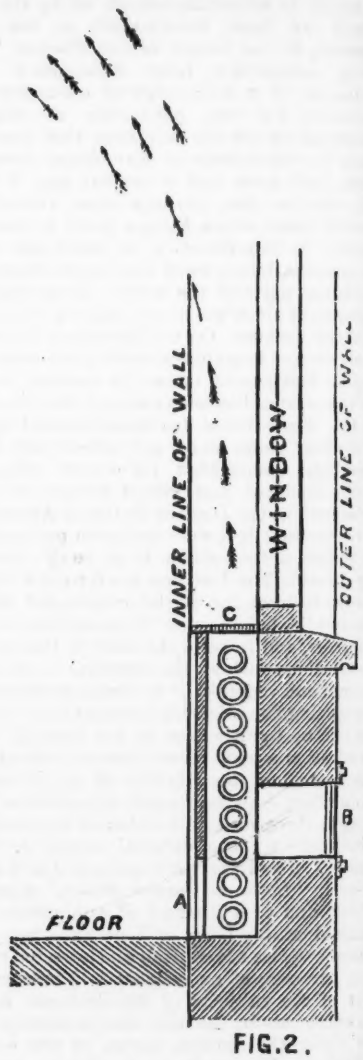


FIG. 2.

Section through Wall of Domestic Building under Window.

Fig. 2 shows the section through the wall of a school, institution, or any domestic building at a window on any floor or landing. The same description applies to this as to fig. 1, except that instead of the wall being built with a cavity, the window recess is carried down to the floor, and the pipes are covered by a wooden case. An arrangement for cleansing the air admitted would seem to be desirable.

The Institute of Art.—The Council of the Institute of Art, 9, Conduit-street, have decided to open the exhibition to the public, free of charge, during the remainder of January.

BUSINESS MEETING OF ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the meeting held on Monday evening, the 3rd of January, Mr. John Whichcord, F.S.A., President, in the chair, the Secretary announced the decease of Hector Martin Lefuel, Member of the Institut de France, Hon. & Corr. Member. From a letter just received he had learnt that M. Lefuel died on the 31st December, 1880, and that the funeral was to take place on Monday, the 3rd of January. The deceased gentleman was vice-president and inspector-general of the Conseil des Bâtiments Civils, and a Commandeur of the Légion d'Honneur. On the death of Visconti he was appointed architect to the Palaces of the Louvre and Tuileries, and held the office until he died. He was a past president of the Société Centrale des Architectes, Paris, and he acted as president of the International Congress of Architects held in Paris in 1878.

The Fugin Student, 1880.—The Hon. Secretary announced that the Council had that day approved the sketches made during his prescribed tour by Leonard Aloysius Scott Stokes, Pugin student (1880), and that they had awarded him the usual sum of 40*l*. Some of the sketches were exhibited on the walls, others were in a portfolio, while, in addition, there were four books of sketches and a written description of the student's tour.

The Sharpe Memorial.—Mr. John S. Quilter, Associate, made a communication relative to a memorial, prepared by the committee of the Architectural Association, of the late Edmund Sharpe, Fellow. The memorial consisted of a volume illustrative of the twelfth-century architecture of La Charente,—thus completing one of Mr. Sharpe's projected tasks. It also contained a memoir of the deceased and a full list of his works. The text had been prepared by Mr. Penrose, who accompanied the excursion of the Architectural Association led by Mr. Sharpe to La Charente, a short time before the latter's lamented death.*

The following gentlemen were balloted for and declared to be duly elected:—

As Fellows.—John Tillman, 5, Bridge-street, Sunderland; Edward Pearson Peterson, F.S.A., 5, Charles-street, Bradford; Ernest Claude Lee (Associate), 30, Great James-street, W.C.; Alfred William Mardon Mowbray, Burton Villa, Eastbourne; Charles Joseph Knight, F.S.A. (Associate), 14, Argyll-street, W.; John Taylor, H.M. Office of Works and Public Buildings; Joseph Stanislaus Hansom, 27, Alfred-place West, South Kensington, S.W.; Ernest George (Associate), 11, Argyll-street, W.; Vincent William Voysey, 45, Park-street, Bristol; Stephen Ernest Smith (Associate), 39, Park-square, Leeds; Edmund Law, jun., 29, Abington-street, Northampton; Edward Joseph Hansom (Associate), 2, Westminster-chambers, Victoria-street, S.W.; David Barclay, 136, Wellington-street, Glasgow; Frederick William Hugh Hunt (Associate), 27, Upper Baker-street, N.W.

As Associates.—Fred. Bath, Crown Chambers, Salisbury; Thomas Tillman, 5, Bridge-street, Sunderland; Walter Hilton Nash, 5, Adelaide-place, E.C.; William John Gribble, 50, Shaftesbury-road, Hammersmith, W.; Edwin Montgomery Bruce Vaughan, Bruce Villa, Dumfries-place, Cardiff; Edwin Thomas Hall, 57, Moorgate-street, E.C.; Frank Protheroe, 10, Great Queen-street, Westminster, S.W.; John Bradshaw Gass, St. George's-road, Bolton; Hampden William Pratt, 3, Long-acre, W.C.; Edward Harnor, 8, John-street, Adelphi, W.C.; Thomas Andrews, 10, Cloak-lane, E.C.; Frank Job Chambers, Crouch-hill, Hornsey, N.; Edward Preston Willins, 39, Woodstock-road, Bedford Park, Chiswick, W.; George Inskipp, 18, Great George-street, Westminster, S.W.; Thomas Edward Pryce, 3, Vetra-villas, Richmond-road, Fulham; Herbert Alexander Pelly, Morden, Surrey; Harold Ainsworth Peto, 11, Argyll-street, W.; George Beaumont, Imperial Buildings, Bond-street, Leeds; Frank Thomas Baggallay, 19, Great George-street, Westminster, S.W.; Arthur Benjamin Plummer, 32, Morton-road, N.; James Lindsay, 196, St. Vincent-street, Glasgow; John James Burnet, 167, St. Vincent-street, Glasgow; Edwin Richard Hewitt, 36, Hilldrop-road, Camden-road, N.; John Edward Arpin, 43, Royal-avenue, Chelsea; William Gilmour Wilson, 134, Wellington-street, Glasgow; William Harrington Scrymgour, 50, Lincoln's-inn-Fields, W.C.; Alfred Baskett Pinkney, M.A., 30, Queen-square, W.C.; John William Stevens, 6, Southampton-buildings, Holborn, W.C.; William King Lucas, Ferndale-villa, Maygrove-road, Hampstead; Zephaniah King, 3, Victoria-street, Westminster, S.W.

As Honorary Associates.—William Quiller Orchardson, R.A., Westgate-on-Sea, Thanet; Henry Joseph Toulmin, Childwick Bury, St. Alban's, Herts; Sir Edward Henry Scott, bart., 27, Grosvenor-square, W.

The following gentlemen were elected as Hon. and Corr. Members:—

Charles Lucas, Member of the Société Centrale des Architectes, Paris, and of the Société des Ingénieurs Civils, Paris, 8, Boulevard de Denain, Paris.

Victor Marie Charles Ruprich-Robert, one of the Inspectors-General of Historical Monuments of France, 10, Rue d'Assas, Paris.

The Chevalier Alphonse de Stuers,' Councillor to the Legation of Paris of H.M. the King of the Netherlands, 140, Boulevard Haussman, Paris.

The Chevalier Victor Eugène Louis de Stuers, Director of Science and Fine Art in the Home Department at the Hague, 32, Park-straat, the Hague, Holland.

Émile Trélat, Director of the École Spéciale d'Architecture, Paris, Architect-in-Chief of the Département de la Seine, President of the Société de Médecine Publique et de Hygiène Professionelle, Paris, 17, Rue Denfert Rochereau, Paris.

William R. Ware, Professor of Architecture at the Massachusetts Institute of Technology, 60, Devonshire-street, Boston, Mass., U.S.A.

Presentation of Portrait.

In the absence of Mr. Horace Jones, Mr. J. Clarke presented the portrait of the late president, Mr. Charles Barry; and said the artist, Mr. Lowes Dickinson, had done all he possibly could to make it worthy of the members of the Institute.

Mr. C. Forster Hayward also bore testimony to the extreme kindness in this matter of Mr. Lowes Dickinson.

The President having cordially accepted the picture,

Mr. Charles Barry, after a few words referring to the portraits of past-presidents, added,—I must entirely endorse what has been said as to our debt to Mr. Lowes Dickinson. He is an old friend of mine, and he took an amount of interest in this which was not purely professional, and an amount of labour for which he certainly cannot receive anything like a due recompense. Mr. Lowes Dickinson's reputation will not suffer by it, so I am told, and so I hope.

A vote of thanks, duly proposed and seconded, to Mr. Lowes Dickinson, was carried with much applause.

St. Mark's Basilica, Venice.—A letter addressed to the secretary by Mr. G. E. Street, R.A., was read, enclosing some of the circulars of the St. Mark's, Venice, committee, and adding,—"I am glad to say that the Academy of St. Luke has expressed lately a decided view as to the recent restorations, and I am sanguine enough to believe that, for the future, works of absolutely necessary repair alone will be executed at St. Mark's." The committee, with power to add to its numbers, consists of representatives from Venice and other parts of Italy; from Paris, Vienna, Berlin, Stuttgart, Zurich; from America, Holland, and the United Kingdom. Mr. Street is the vice-chairman, and Mr. Henry Wallis the hon. secretary. The offices of the committee are at 9, Buckingham-street, Strand. Mr. Ewan Christian made some interesting observations justifying the action of the committee.

Exhibition of Fine Arts, in April, 1881, at Madrid.—A letter was read from the Lords of the Committee of Council on Education, transmitting information relative to an Exhibition of Fine Arts which it is proposed to hold at Madrid in the month of April next.

Examination under By-law XIV.—The subject was introduced to the meeting by the President, who said,—Before I ask you to discuss our proposed regulations and programme of the examination under By-law XIV., I may perhaps be permitted to make a brief reference to events which have led up to and accompanied the successful preliminaries to an important measure intimately connected with the progress and development, throughout the British Empire, of the architectural profession, represented as it is by the corporate body of which we all have the honour to be members. The by-law under which our action has been taken was not in existence four years ago; it was formulated during the deliberations of 1877, when our past presidents and those who were then past vice-presidents came forward at your request to assist the council, not so much in improving the method of our work as in arousing a spirit of earnest energy within our ranks,—a spirit which was not then conspicuously apparent. That by-law, when first recommended for your consideration, contained a proposition that the year 1880 should be the last on which candidates for associateship would be admitted without passing an examination, and it was in deference to the opinion of a special general meeting that the limited period was prolonged until May, 1882. Almost immediately after that by-law, so amended, was agreed to, and a general revision of all the by-laws was happily accomplished, the Council, who did this and many another good thing, went out,—in May, 1877,—having by their own recommendations hastened their own dispersal. At the same time, by similar recommendations, they largely assisted in the formation of the present Council, principally composed, as you know, of seniors who had been vice-presidents, and of a few younger men who had previously served the Institute well, or who had attained high professional distinction. My friend, Mr. Charles Barry, was called to the chair, and during his three brilliant years of office, two voluntary architectural examinations were held. These, according to rule, were ordered to take place biennially, and the Council were not bound in 1880 to hold an examination. Nevertheless one was held this last year, and another, the twelfth and final voluntary architectural examination, is fixed for next June. Under these circumstances, the award of the Ashpitel Prize, which is a biennial gift, has become difficult; it will be equally difficult after the present year, when our future obligatory examination will take place certainly not less than twice a year. But of this I shall speak presently, when I have alluded to the work accomplished by two excellent committees. It was just after my promotion to the post I have the gratification to hold that the Council appointed a Special Examination Committee to assist them in drawing up a scheme for the obligatory examination, and this Special Committee requested our Fellows, Mr. H. L. Florence and Mr. J. Douglass Mathews, who thereon represented the Architectural Association, to devise a feasible method of procedure. It was from sitting as chairman of this Special Committee that I was enabled to devote to the subject a large portion of my first presidential address, and a short time after the delivery of that address the Special Committee submitted a report to the Council, who forthwith ordered it to be printed and issued, not only to members of Council, but to all those past-presidents and past vice-presidents who are always invited to attend every Council meeting. The result was that the heads of the scheme were printed in our annual report, with the hope and intention of eliciting opinions from the general body at the annual meeting held last May. But, unfortunately, another subject then occupied so much time that the heads of our examination scheme were squeezed out of the discussion, and only tacitly adopted. What happened afterwards was narrated to you in my address, delivered at the opening meeting of this session. The Council then appointed another committee for the purpose of working out the details of our scheme, and after nine sittings the report of this second committee was adopted with a few verbal amendments by the Council. The report included the regulations and programme which have been printed in the Journal of Proceedings, and which were issued to every member of the Institute just before Christmas-day. Their completeness is largely due to Mr. Arthur Cates, the chairman, and Mr. R. Phené Spiers, the secretary of this Examination Committee, one of whose recommendations was to the effect that every gentleman who had passed the Proficiency Class of the Voluntary Architectural Examination should be declared eligible for nomination as an Associate without further examination. This being approved by the Council, it will be necessary at some future Special General Meeting to ask for a slight modification in the wording of By-law XIV. Instead of the word "pass," it will be necessary, if you approve, to substitute the words "have passed,"—a simple correction which is not likely to be misunderstood or opposed. Another recommendation, which involved a merely clerical detail, was that every passed candidate in the Proficiency Class of the Voluntary Examination should, when a Member of the Institute, be denoted in the published roll by a special mark. This, as you have seen, was done in the list of Members published last October, and in future all persons who have passed or who may pass the examination will, on being admitted as Associates, be thus distinguished,—at least, that is, I think, the proper course to pursue. With reference to the Ashpitel Prize, and the difficulty of awarding it annually instead of every two years, the Council have already acted. We propose to take advantage of paragraph 5 of the schedule which is thus worded:—

"5. It shall be lawful for the said Institute, with the assent of the said Francis Ashpitel, during his life, and after his death then at the sole discretion of the said Institute, to cancel any existing regulations and to make any new regulations with respect to the manner, terms, and conditions of offering the said prize, either instead of the regulations herein contained or in addition thereto, providing such new regulations are not inconsistent with the object of this agreement, namely the giving of a Prize for the encouragement of the study of architecture to be always connected with the name of the said Arthur Ashpitel."

We shall solicit from the Rev. Francis Ashpitel his assent to a modification whereby the prize may be awarded once a year to that successful candidate who, during the year's examinations, distinguishes himself most creditably in any one

* Only a limited number of copies is to be printed, and applications should be addressed immediately to Mr. J. S. Quilter, 10, Brunswick-square.

of them. There may be other difficulties of a less important nature,—connected with the launching of our obligatory examination,—which will be elicited during discussion. All I need now say is that whatever suggestions it may please individuals to offer, or whatever resolutions may be carried by the general body of Fellows present, will be carefully weighed and seriously entertained by the Council. I have only now formally to move:—"That the Regulations and Programme of the Examination under By-law XIV., as approved by the Council and printed on pp. 95 to 98 inclusive of the Journal of Proceedings, 1880–81, be received and adopted."

Mr. Arthur Cates seconded the motion.

After a discussion, in which Messrs. Lacy W. Ridge, Robert Walker, Ewan Christian, H. Dawson, E. C. Robins, Charles Fowler, J. Douglass Mathews, E. G. Bruton, R. Phené Spiers, Robert Kerr, T. H. Watson, J. S. Quilter, Hugh Stannus, H. L. Florence, Barry, and the President joined, it was resolved:—"That the Regulations and Programme of the Examination under By-law XIV., printed on pp. 95 to 98 inclusive, of the Journal of Proceedings, 1880–81, be adopted, subject to the insertion after the word "Plan" on page 98 (ninth line) of the words "Section and Elevation."

INTERNATIONAL SANITARY AND MEDICAL EXHIBITION.

LAST week we reported that the committee of the Parkes Museum of Hygiene proposed to hold in London an International Sanitary and Medical Exhibition, on the occasion of the International Medical Congress, this year. We are glad to find that the proposal is meeting with favour. The executive committee of the Medical Congress have given it their support, and Her Majesty's Commissioners of 1851 have informed the Museum Committee of their willingness to afford space for the exhibition at South Kensington. The task thus undertaken will be an arduous one, as the exhibition is not only to be international, but it is to embrace the industries connected with medicine, as well as those pertaining to domestic and hospital architecture, including articles illustrative of the following subjects:—

Planning and Construction.
Ventilation, Lighting, and Warming.
Water-closets, Sinks, and Baths.
House-drainage.
Water Supply and Filtration.
Main Drainage.
Surgical Instruments and Apparatus.
Appliances of the Ward and Sick-room.
Drugs, Disinfectants, and Medical Dietetic Articles.
Electrical and Optical Apparatus.
Microscopes and other Apparatus used in the investigation of disease.
Appliances used for the treatment of sick and wounded during war.

Since the decision of the committee last week another meeting has been held to further consider the matter, and it was agreed to appoint a special committee to undertake the work of organising the Exhibition, and this special committee is to meet regularly once a week. This special committee consists of Professor Corfield, Mr. Rogers Field, Mr. Geo. Godwin, Mr. E. C. Robins, Dr. Steele, Dr. G. V. Poore, with Professor Berkeley Hill as treasurer, and Mr. Mark H. Judge as secretary. A guarantee fund has been started for the purpose of meeting the expenses of the Exhibition, the funds of the Museum not being available for the purpose. Exhibitors will be charged a small sum for space, awards of merit will be given, and any profit that may result will be devoted to the purposes of the Parkes Museum. A guarantee fund of at least 500*l.* is required by the committee, but there should be little difficulty in exceeding this amount, as architects, medical men, inventors, and manufacturers may alike be expected to contribute. We hope the required funds will be subscribed at once, so that the committee may be able to proceed, without delay, to make the necessary preparation for the Exhibition, which, if properly managed, ought to be the most important exhibition yet held in connexion with hygiene and the public health. We believe that no definite arrangements will be made before the guarantee fund has reached 500*l.*, but it is probable that the Exhibition will be opened about the middle of July, and close with the Medical Congress in August.

Many of our readers will probably see it is to their interest that such an exhibition should be held on this occasion, and in that case they should send their names immediately to help the guarantee fund. If we may judge from the results of former exhibitions of the kind, they may do this without any fear of being called on to contribute.

MORTAR.

FOR FRESCO AND BUILDING PURPOSES.

SIR,—Artists, as a rule, are not supposed to know much about bricklaying or masonry, but in studying the *tecnique* of fresco in Munich I acquired the knowledge of both the theory and practice of making sound and durable mortar. In controverting the assertion of the opponents of fresco painting in this country, that it will not stand the climate, I have repeatedly instanced the soundness of the mortar used by the Romans, after the lapse of so many centuries, and though exposed through these centuries to this very terrible climate. The mortar found in the ancient wall recently discovered in the city confirms this; and if mortar will stand for fifteen centuries exposed to an English climate, fresco will, if it be properly executed, for the permanence of fresco depends upon enduring mortar. But in spite of this decided evidence, and rather than encounter the somewhat difficult *tecnique* of *buon fresco*, we would rather accept unproved, new-fangled methods, and such misnomers as spirit fresco, &c. Nevertheless, I cannot but confess that it is scarcely worth the artist's while to waste his time in acquiring the *tecnique* of true fresco when there is no encouragement for mural painting.

But to return. Good mortar is not to be made from the lime derived from the burning of chalk, as is the common practice in this country; it contains too great an amount of foreign matter, and takes up carbonic acid far more slowly than that obtained from the burning of purer limestones.

It is common to talk of more or less caustic limes as if mere lime could vary in its quality; it is the same in all limestones, and is only greater or less in quantity. The purest limestone consists, in atomic proportions, solely of

Carbonic acid	44
Lime	56
Carbonate of lime	100

Thus constituted, whether in its original state, or reproduced by chemical agency, it is not at all caustic.

If the limestone be subjected to sufficient heat, it loses its carbonic acid, and there are left,—

Lime	56

Let there be added to this lime as much water as will combine with it, and the result is a compound of,—

Lime	56
Water	18
Hydrate of lime	74

This proportion of water in combination with the lime does not (apparently) moisten it. Hydrate of lime is a dry powder, the addition of more water either mixes with the lime mechanically, or dissolves it.

Let these 74 of hydrate of lime be exposed to the air,—the water is expelled by carbonic acid,—and the result is as at first:—

Carbonic acid	44
Lime	56
Carbonate of lime	100

This is, chemically speaking, the original limestone, although the original state of cohesion is never regained. The non-caustic state is, therefore, arrived at when, *by exposure to the air or other means, lime has regained its maximum of carbonic acid.* This is the hardening or petrifying process, on the completeness of which the cohesive strength of mortar depends. Time has no effect on pure lime, whether slaked or unslaked, *provided it be not exposed to atmospheric air, or some source of carbonic acid.* Opinions are diverse regarding the necessity of keeping the slaked, hydrate of lime buried, or by some means air-tight, through long periods of time, which we learn from Vitruvius was the practice of the ancients. Such a practice would not mitigate the causticity of the lime, though it might conduce to its perfect slaking.

We learn, then, that the induration or petrifaction of the hydrate of lime depends on a sufficient supply of carbonic acid, and if its only source of obtaining this be atmospheric air, we can readily understand that the chances of mortar hardening becomes less and less as it lies deeper and more remote from the surface of walls; the lapse of time may, therefore, in some measure, account for the marvellous hardness and tenacity of the Roman mortar. No one who has not experimented with mortar can have any idea how slowly the process of induration proceeds. Mortar, in the depths of a wall may be recovered and worked up again, long after it has been laid. It is the surface of the mortar exposed to the atmosphere that is first converted into carbonate of lime,—that is, first petrified. The question, then, which immediately suggests itself is this,—Were the Romans acquainted with any means of supplying carbonic acid to the hydrate of lime by mixing some chemical with the mortar? Is there any substance which, crushed, would prove a substitute for quartz, river sand, in the composition of mortar, and which would at the same time help to supply it with carbonic acid? We know that the admixture of silica and alumina facilitates "setting." In ordinary mortar there is a partial combination with the silicate of the sand. Could either pulverised flint or water-glass be used with effect in the preparation of mortar?

Ordinary mortar, when exposed to the continuous action of water, softens and disintegrates, and some of the lime dissolves away. Lime which contains 20 or 30 per cent. of clay or finely-divided silica produces a mortar which is not liable to this softening, but possesses the property of hardening under water; such lime is called *hydraulic*, and the mortar made from it hydraulic cement or mortar. Puzzolano, a porous lava found at Puzzuoli, near Naples, has been long celebrated for its property of forming a hydraulic cement when mixed with ordinary lime. It is mainly composed of silicates of alumina, lime, and soda. Portland cement is made from clay found in the valley of the Medway, which is intimately mixed with the neighbouring chalk and then burned. Roman cement contains a larger proportion of clay, and solidifies more rapidly.

The limestone which furnished the lime used by the artists at the beginning of the sixteenth century and by the ancients, was without doubt travertine. The Colosseum, St. Peter's, and various other ancient and modern edifices in Rome are built with blocks of this stone; its colour is a yellowish-white; but after long exposure to the air, it acquires a reddish tint, probably from the small quantity of iron which it contains. From this account of the origin of the stone it might be inferred that it would be almost a pure carbonate of lime. Its analysis, in fact, is:—

Carbonate of lime	99·4*
Alumina, with a trace of oxide of iron	0·6
	100

The limestone selected for the frescos in the Palace at Westminster was procured from a quarry called the "White Quarry," on Durdham Down, near Bristol; it is equal or even superior to the travertine in purity, though the original colour is less promising, owing to the presence of bituminous matter: this, however, disappears in the burning. Its analyses are:—

Carbonate of lime	99·5
Bituminous matter	0·3
Earthy matter	0·2
	100

"Bristol Durdham Down, white lime":—

Carbonate of lime	99·6
Bituminous matter	0·2
Earthy matter and oxide of iron	0·2
	100

"Bristol Durdham Down, producing very white lime for plasterers":—

Carbonate of lime	99·7
Bituminous matter	0·1
Oxide of iron and earthy matter	0·2
	100

I procured some of this limestone, had it properly burned, slaked, and converted into "putty," for the execution of those specimens of fresco which I contributed to the Westminster Hall competitions. I mixed one part of this "putty" with two of fine river sand for the intonaco, and used the "putty" well ground, for the white for painting with, and for mixing with the colours. One of the specimens of fresco executed with this lime was for years exposed to all the inclemency of the weather, without suffering any injury,—a fact which was recorded in the *Athenæum*. The remainder of the "putty" was thankfully received and eagerly carried off by a builder.

* The following analyses were made by Mr. Richard Philips, of the Museum of Economic Geology, under the sanction of her Majesty's Commissioners of Woods and Forests.

The foregoing facts and suggestions may possibly be of some assistance to those who are anxious to improve the strength and durability of mortar. W. CAVE THOMAS.

SALE OF A BUILDING ESTATE AT SUTTON.

IN addition to the many sales of building sites around the metropolis which have taken place during the year 1880, the Hall Mead estate at Sutton has just been disposed of by Mr. N. J. Collier. Building in the locality of Sutton has been going forward at a rapid rate during the last few years, and the district, which was formerly rural, now contains a large population. The estate, which is conveniently situated close to the London and Brighton Railway Station, has been laid out in 47 sites for the erection of small residences, for which it is stated there is now a great demand. The sites, which severally have frontages of 18 ft. with a depth varying from 80 ft. to 140 ft., commanded a ready sale, all the forty-seven sites being sold at prices ranging from 25*l.* to 36*l.* each, realising a total sum of 1,258*l.*

BUILDING IN NORTHUMBERLAND AVENUE.

NEW THEATRE.

THE land in Northumberland Avenue, belonging to the Metropolitan Board of Works, has now for a lengthened period remained vacant, but there are at present symptoms of portions of it being occupied before long. Amongst other new structures for which preparations are being made, is, as we have already mentioned, a new theatre for Mr. Sefton Parry, at the lower end of the Avenue, near the Thames Embankment, and at the corner of Craven-street. The site has been enclosed by a hoarding, and the foundations are now being got in. We understand that the building will have two handsome elevations, the principal frontage facing the avenue, with another elevation in Craven-street. Internally, the new theatre is intended to be rather compact and ornamental than very large, its capacity being equal to an audience of about 1,000 persons, independently of twelve private boxes. There will be 140 stalls, 100 balcony-stalls, 120 dress-circle seats, 300 pit-seats, 96 amphitheatre-stalls, and 300 gallery-seats. The architects are Messrs. Fowler & Hill. We learn that the new theatre is to be completed and ready for opening in September next.

In addition to the above-named building a spacious site, at the angle of the west side, opposite the Grand Hotel, and facing Charing-cross and Trafalgar-square, has been leased for the purpose of erecting a block of buildings, the ground-floor portion of which is intended for shops, whilst the upper floors are announced as suitable for club or residential purposes.

It is further stated that negotiations are in progress with the Metropolitan Board of Works with the view of leasing another portion of the land for the purpose of erecting a new building to be called the Junior Reform Club.

THE CHURCH OF THE HOLY TRINITY, CROUCH HILL, HORNSEY.

THIS new church was consecrated by the Bishop of London on December 31st, 1880. The complete plan will consist of a nave of six bays, 35 ft. wide by 105 ft. long, with aisles 5 ft. 6 in. wide. The two easternmost bays have transept aisles, and on the south side there is a porch. The whole of the building is now finished, except the two western bays of the nave of the tower (which will be at the south-west angle). The chancel is 31 ft. wide, and 32 ft. long, with a south lean-to aisle. The organ-chamber and vestry are on the north side of the church. The former is spacious, and the organ, by Messrs. Bishop & Son, has been put into it. The accommodation of the church, so far as built, is for about 700 persons. The style may be described as based on that of the thirteenth century. The walls are of brick, faced externally and internally with Kentish stocks, relieved with red brick bands, arches, labels, and string-courses. There is also a dado of blue Staffordshire bricks all round the interior. Stone is everywhere very sparingly used,—Doulting for the exterior, Corsham Down for the interior. The piers to the nave arcade, to the shafts carrying the trusses to the nave roof, and to the chancel arch, are of Forest of Dean stone. The whole of the roofs are of fir, having panelled ceilings left clean from the tool, covered with Portmadoc slate, with red ridge tiles. The trusses to the polygonal-shaped nave ceiling, between the collar of the apex, are filled in with ornamental tracery. The ashlar pieces are panelled and cusped. Ornamental brick arches, perforated above, occur instead of principals to the nave aisles. The wagon-headed panelled cusping to the chancel has the principal ribs boldly cusped, springing from stone corbels. The wooden floors everywhere are on the solid system. The nave is seated with pitch-pine open benches, having shaped ends. The chancel seats, &c., are of a more ornate description, and of English oak. The pulpit is a handsome oak one, on a moulded red Mansfield stone base. The windows are glazed with ornamented lead quarries in cathedral glass of various tints, mixed with ordinary white glass. There is a lofty clearstory to the nave. The nave seats were supplied by Mr. Hammer, of the Strand. The brass lectern, gas-fittings, communion-rail, and other furniture were supplied by Messrs. Jones & Willis. Mr. Thomas Boyce, of Hackney, was the builder. The warming apparatus is by Mr. Grundy, on his system. The total cost of the works just completed will be from 6,800*l.* to 7,000*l.* The architect is Mr. Edmund B. Ferrey. The two principal land-owners, Mr. Joseph Lucas and Mr. F. Willan, gave 1,000*l.* each towards the church and the site.

BRICKMAKING AT BRIXTON.

ALLEGED NUISANCE.

AN extensive brickfield at Brixton has occupied a considerable portion of the time of Mr. Chance, the stipendiary magistrate at Lambeth, during the past two or three weeks. The Lambeth Vestry had summoned Mr. John Loat, brickmaker, occupying a field in Acre-lane, Brixton, for causing a nuisance injurious to health. Amongst the witnesses called in support of the summons was Dr. Farr, the medical officer of health to the parish, who stated that, for some time past, there had been a very offensive smell arising from the process of brick-making in the field of which Mr. Loat was the owner. He said that the operation was not under the system of "kiln" burning, but under what was known in the trade as the "clamp" system. In his opinion it was certainly injurious to health, refuse frequently mixed with decomposed animal and vegetable matter, the contents of dustholes, being used in the burning process. In cross-examination of the witness by Mr. St. Aubyn, who appeared on behalf of the defendant, it was elicited that the parish rented a portion of the land for the deposit of road-scrapings, and the mixing of materials used for tar-paving; but the witness stated no nuisance arose from that. He added that on visiting the ground he saw little brick-earth in the field, whereupon Mr. St. Aubyn observed that there was enough clay still in the field to make 50 millions of bricks. In answer to the magistrate the witness stated that he believed the brick-making had been going on for some years, adding that it might not be so great a nuisance if the siftings used in the burning were without animal or vegetable matter.

Dr. W. H. Corfield, medical officer of health for St. George's, Hanover-square, who had likewise visited the field, corroborated Dr. Farr's evidence as to the offensive smell being likely to injure health, adding that in the stuff on the field he saw pieces of bone and rags, and that there was no reason to use such offensive matter for brick-making, but in its place fine coal.

Several witnesses residing in the neighbourhood also gave evidence.

The defence brought out evidence of a peculiar character as affecting the Vestry. It appears, from Mr. St. Aubyn's statement, and the evidence he produced on behalf of Mr. Loat, that the business of brick-making had been carried on in the field for upwards of seventy years, and that the Vestry, which had allowed the business to be carried on for so long a period, now for the first time interfered, almost immediately after Mr. Loat had expended a large sum in machinery and plant. It also transpired that the Vestry had for some time past used the field as a dust-shoot for animal and vegetable matter, and it was contended that this had caused the effluvia.

Under these circumstances the magistrate imposed the nominal penalty of 20*s.*, without costs, no offensive refuse to be in future shot on the ground.

A NEW MUNICIPAL BUILDINGS COMPETITION FOR GLASGOW.

THE committee of the Glasgow Town Council to whom the new municipal buildings designs were remitted fully a couple of months ago, have decided against the competitive scheme for which Mr. Corson, of Leeds, obtained the first premium. Mr. Carrick, the Master of Works for the city, who has examined all the designs submitted, reports that five of the ninety-five could be executed for the 150,000*l.* allowed for the new buildings, with, of course, 10 per cent. for contingencies. The members of the committee afterwards made a minute examination for themselves, and they are of opinion that none of the five designs can be recommended for the acceptance of the Corporation; that, as the cost of the designs invited under the conditions of competition was limited to 150,000*l.*, they could not accept a design which would exceed that sum; that new conditions of competition with a view to new designs should be prepared; that the ground plans prepared by Mr. Carrick should be reconsidered and submitted to competitors simply as indicating the accommodation required; and that the cost of the building for which new designs are asked should be increased to 250,000*l.*

ROYAL ACADEMY ARCHITECTURAL SCHOOL.

THE following gentlemen have been admitted:—

Students of the Upper School.—J. B. Phillips, J. C. Yates.

Lower School.—W. J. Allen, H. R. Best, Chas. Burton, J. C. Carter, T. J. Dalziel, A. Hemingway, E. W. Jennings, J. N. Johnston, E. Nevinson, J. T. Newton, F. Simpson, E. J. Slow, N. J. Stanger, P. Thicknesse, G. W. Winchester.

Probationers.—G. Blizard, E. B. L. Boyce, G. C. Horsley, H. H. Kemp, Arthur Kent, A. Leslie, H. W. K. Martin, N. G. Nixon, Herbert Read, Thomas Sims, J. A. Slater, R. E. Smith, C. H. Stock, W. Toogood, J. R. Withers.

CAN A BUILDER CHARGE FOR AN ESTIMATE?

IN answer to "W. B." I beg to say I have been in large practice as a builder and contractor for over thirty years. During that time I had to sue twice in the County Court for my charge for making estimates for new buildings, viz., once at Dorking County Court, 1864, presided over by the late Judge Turner. He ruled that I was entitled to three items in my charge for making estimates when privately employed. After my three estimates had been made for the house (but different plans) it was opened to public competition. For this item he disallowed. In 1866 I had almost the same thing occur, and was obliged to sue in the Guildford County Court. The present County Court Judge, Stoner, allowed the cost of estimating when privately employed; but on no account can a builder charge for making an estimate, whether quantities are supplied or not, if done in public competition. It is only a legitimate way of business, which, no doubt, is a great loss to a builder when he employs a surveyor to take out the quantities. There is no man more capable of making an accurate estimate than the builder himself. He knows the local advantages and *vice versâ*.

BENJN. INKPEN.

SIR,—Your correspondent, "W. B.," asks whether a builder on tendering unsuccessfully in competition for small works can charge for his time and labour where the formal clause, "The lowest or any tender not necessarily accepted," is omitted.

I think not; and remember a case so decided, but cannot now lay my hands on the report.

The consequences would, indeed, be serious and (by analogy) widespread were it otherwise. If such a man, in any case, expects to be paid, he should exercise customary prudence and intelligent attention before tendering. "There must," Gibbons remarks, "be something given or done, or *agreed* to be given or done, by *each* party to the contract." No kind of irrevocability is *implied* on either side where there is no contract. As the tender is merely an offer to do work at a stated price, and can be withdrawn at any time before acceptance, so, with this liberty on the part of the builder, it would be inequitable to tacitly bind the employer to pay for its preparation on rejection. EDWARD L. TARBUCK.

PROPOSED FONT FOR THE PARISH CHURCH, SHEFFIELD.

SIR,—Designs for this were advertised for in the *Builder* last year, to be sent in not later than September 1st. What has been done in the matter? COMPETITOR.

THE ORIGIN OF THE ARCHITECTURAL ASSOCIATION.

SIR,—If it will not too much lengthen the correspondence relating to the origin of the Architectural Association, I would remark that the exhibition of the Association of Architectural Draughtsmen referred to in Mr. Colling's letter in the *Builder* of the 25th ult. was opened in 1845, and is commendingly noticed in the *Builder* of the 6th of September of that year.

As its honorary curator, I can state that it was visited by yourself, Mr. Editor, and that it received a very attentive examination from Sir Charles Barry (accompanied by Lady Barry); and this implied testimony to its merit will outweigh any opinion of mine upon the subject.

Professor Kerr, who knows what it is to have a "favourite society" of his own, will, I am sure, pardon me if I continue to believe myself, as a member of the A.A.D., one of those who laid the foundations of the Architectural Association.

It seems to me that the A.A.D. has but scant justice from him; and I submit that the exhibition opened by it, if even its prospectus did not show it, clearly shows that it was not a mere "benefit club." It cannot deserve that name from the "nucleus of a benevolent fund" recommended to the notice of the "wealthier members of the profession." Five objects are mentioned in the prospectus, in furtherance of which an annual subscription of one guinea was required from each member; *but* subscription to the benevolent fund was at the member's option; its receipts were not intended for the aid of members exclusively; and I have been informed by its treasurer, Mr. J. K. Colling, that the sole case of relief was one in which the recipient was not a member of the Association.

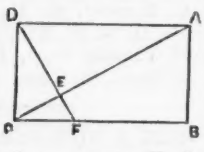
There is a difference of opinion as to whether the A.A.D. can be said to have joined the junior Society or *vice versâ*. Mr. Colling's opinion, opposed to that of Professor Kerr, is confirmed by a circumstance which, because of its significance, must be borne in mind in any controversy upon the matter. It is that the negotiations for the union took place in the A.A.D. rooms; and that these were the place of meeting of the amalgamated bodies until the removal to Lyons' Inn.

Remembering the formation of the A.A.D., the zeal with which it was sustained, and the attempt to establish an architectural exhibition, I cannot persuade myself that it was as "slow" and "slumberous" as would be supposed from the recent description by a much-esteemed and learned professor.

E. C. SAYER,
First Hon. Sec. to the A.A.D.

A SURVEYOR'S PROBLEM.

SIR,—Will any of your correspondents help me to solve the following? I want to find the contents of the annexed figure, known to be a rectangle; but the only measurements which I have are the lines A E, 87 ft., and E F, 14 ft. A E is a segment of the diameter A C, and F D is drawn perpendicular to it from the angle D.



COMPUTER.

COMPENSATION CASE AT LIVERPOOL.

SIR,—Will you allow me to prevent any erroneous impression being given by the report on this case in your paper of January 1st?

The Corporation required a long strip of land of the claimant's frontage, to widen (for tramway purposes) Wavertree-road, one of the most important thoroughfares out of Liverpool.

The claimant had laid out the land as follows:—The front to Wavertree-road in shops, and the back land for cottages, arranged in streets running back from Wavertree-road.

His surveyors valued the strip on the road as front land; those for the Corporation priced the strip required as back land. The jury decided this piece of frontage was back land, and gave a verdict accordingly.

Without this explanation, the value given by the claimant's surveyors would appear unreasonably high, and I, as one of them, shall be obliged by its insertion in the next issue of the *Builder*.

EDMUND KIRBY.

WARMING OF BUILDINGS.

SIR,—Several of your correspondents appear to think lightly of the difference between the heat radiated from an open fire and that diffused by hot air or water-pipes as a means of warming an apartment.

During my pupilage, I had five years' experience of a moderate-sized office heated by hot-water pipes, and I found it produced an uncomfortable sensation, and not infrequently headache also, and this experience is confirmed by an occasional hour during the winter spent in the Houses of Parliament, or nearly any public building where heating by either of the latter methods is carried out.

One reason for this discomfort is the fact that the increase of temperature in the air is out of all proportion to the heat received by radiation. Another is the difference in the character of the heat radiated. Authorities tell us that in all bodies there is a mutual exchange of caloric by radiation with the surrounding matter, even where rays of a lesser are given to a body throwing off rays of a greater temperature, and that even where the rays are of the same temperature there is often a great difference in the powers of penetration, and probably of other qualities between those produced in different ways.

The heat of the sun's rays can be felt through glass long before it is itself heated, but the inability of the rays when thrown off again by the earth inside a greenhouse, or the rays produced by a fire, to pass through glass, except by conduction, is well known.

How far heat which is separated from light is capable of exercising a healthy effect on the animal system, I fear science has not yet been able to decide; but experience seems to prove that it is far more comfortable to sit, on a cold day, within a moderate distance of a good fire than to get the same amount of warmth from a hot-water coil,

I believe heated air as a means of warming to be radically bad, and fear that in the long run it must greatly weaken the chest and lungs if it does not produce more serious results. Even where combined with an open fire I think it should be avoided. The comparison of a calm, cloudy, sultry day with one when there is a hot sun tempered by a cool breeze, fairly represents the difference between a room warmed by an open fire, and one warmed by hot air.

In speaking of the substitution of gas and Dr. Siemens's gas and coke fires for those burning ordinary coal, Dr. Carpenter tells us that they would do away with the necessity for smoke-preventers and chimney-doctors. Would not the very smokelessness of the fumes which should go up the chimney, but too frequently act the reverse way, prove an element of great danger, for many people who would open the window to get rid of the smoke would suffer from the slow poison of the gas-fumes, without ever suspecting that cause of their ill-health?

CHARLES J. BENTLEY.

NEW EXCHANGE STATION, LIVERPOOL: COMPETITION.

DEAR SIR,—Having had considerable experience in station work, I thought of competing for the above, and at first sight the premiums looked tempting. However, my opinion has been altered. In the first place, all competitors will have to get their own levels. No section being provided, and then not feeling quite sure about one of the conditions, *i.e.*, that requiring "quantities" to be deposited with the designs, I wrote to the Secretary of the Lancashire and Yorkshire Railway asking if by this it was meant regular "bills of quantities," such as would be sent out to contractors, or only such general quantities as an engineer would prepare for his estimate. In reply he writes me, on the 31st ult.,—"The directors require to be supplied with *detailed* quantities."

Now with this entirely disappears all chance of being fully paid for one's work. Say, for instance, the buildings cost 150,000*l.* (at least), the fair charge for the quantity surveyor would be 1 per cent., or 1,500*l.*; then there is the expense of preparing a large set of drawings, and a specification and estimate. Of course, if there were any certainty that the directors would carry out the chosen design it might be worth the while of architect and quantity surveyor, &c., to join in such speculative work; but they do not bind themselves to do so, and it seems to me that they are only trying to get the brains and handiwork of other people at a very cheap rate.

ARCHITECT.

STONE AT WESTMINSTER ABBEY.

SIR,—I notice in the *Builder* of January 1 (p. 31), under the head "Spire of South Hackney Church," that Mr. Scott proposed to use for repairs "Dorcetshire stone, as used for repairs of Westminster Abbey." This may be misleading, as the stone being used for Westminster Abbey I am supplying from the old quarries of *Chilmark, in Wiltshire*, which are being worked by me.

T. P. LILLY.

THE SPIRE OF SOUTH HACKNEY CHURCH.

SIR,—In your issue of Jan. 1st., the rector is reported to have stated that "Mr. Scott, son of the architect of the church, had been asked to inspect the spire." Will you kindly allow me to say that the late Mr. Edward Hakewill was the architect of this church, and that I am in no way connected with him.

W. GILLBEE SCOTT.

"QUANTITIES."

SIR,—Can any of your readers inform me whether the dimensions (or a copy of them) from which quantities are ascertained are legally demandable by the builder on his paying the surveyor's charges?

CONTRACTOR.

*** Such a claim is very unusual, and, we should say, not maintainable.

THE LONDON WATER QUESTION.

SIR,—As every little matter helps in this all-important question, I would be glad to learn whether the valuers have capitalised "sealed" hydrants in private establishments; if so, at what sum? Doubtless, judging from the figures, a *big one*.

AN OLD FIREMAN.

SEWERAGE MATTERS.

Shepton Mallet.—The Local Government Board have sanctioned the application of the Shepton Mallet Local Board to borrow 10,000*l.* for sewerage purposes. A plan, prepared by Mr. A. T. Catley, for sewering the town on the separate system, and for disposing of the sewage by irrigation, has been approved. The following is an extract from the inspector's report:—

"At the outfall there are 18 acres of land which are commanded by the sewage. At the highest point of the land the sewage will be received into tanks, where the grosser solids will settle by gravitation. From the tanks the sewage will flow by a few main carriers over the land. The tanks are situated on high ground, well removed from buildings and the high-road. The land lies for the most part on a hill-side, sloping down at an inclination of 1 in 15 to 1 in 20 to the stream. The soil is a stiffish red marl, some 4 ft. deep, resting on limestone rock. Between the foot of the slope and the stream there are some three or four acres of flat land, with a deep marly soil. These it is proposed to embank, underdrain, and use as filters. A good outfall for the underdrains can be obtained, and these areas, after disposition of solids in the tanks above, should be capable of taking a large body of sewage. The quantity of sewage may be taken as 20 gallons for 4,200 population, or 84,000 gallons, or about 400 tons per day. This would give 1 in. per day over four acres."

Miscellanea.

"A Good Name is better than Riches."—Under this heading the *Exeter and Plymouth Gazette* says,—As the last ray of sunshine in the expiring year streamed fitfully through the painted windows of the south aisle of Heavitree Church yesterday afternoon, it illumined momentarily the forms of the workmen who rested from their finished labour. On the wall of that aisle, near to its eastern end, they had just placed a mural tablet of pure statuary marble. The superscription thereon reads as follows:—

STEPHEN SHUTE,
13 YEARS A MEMBER OF THE CHOIR OF THIS CHURCH.
He was: As a working statuary, singularly skilful; As a foreman, beloved by man and master; As a Christian, humble and sincere.
Called away September 3rd, 1880, aged 42.
This tablet was erected by one in whose service he died, and who mourns him as a brother.

The monument is a parallelogram, measuring about 3 ft. by 2 ft. Its statuary marble slab is moulded and polished, and quietly enriched by incised ornament. Around the whole is a border of grey dove marble. This has been erected within the parish church of St. Michael at Heavitree, by permission of the vicar, the Rev. Prebendary Reginald H. Barnes, M.A. The sudden death, from cholera, of Mr. Shute, just after his return home from Belgium, last autumn, was recorded in the Obituary column of the *Builder* for September 18th. A subscription was started for the widow and nine children left behind, and nearly 100*l.* has been raised for their benefit. The fund is not yet closed, and possibly some other of our numerous readers may be desirous of contributing thereto.

Proposed College for Dundee.—At the monthly meeting of the directors of the Dundee School, Dr. John Boyd Baxter, procurator fiscal, referred to the proposal made several years ago to make Dundee a collegiate town. At that time, he said, the movement aroused great enthusiasm, and but for the dark cloud of commercial depression which rested over the town it was probable that it would have been carried to a successful issue. Now that the cloud seemed to be passing away he trusted the movement would be resumed, and he intimated that if a satisfactory constitution for a college to be located in Dundee, and to embrace art and science classes,—a college similar or nearly similar to Owens College at Manchester,—could be obtained, he was in a position, with the munificent assistance which had been tendered, to place at the head of the subscription for the institution of such a college a sum of 125,000*l.*, the money to be paid by three or four instalments, as necessity should require, or as it should be called for by any superintending committee. Such an institution, he added, would prove of incalculable benefit to the town, and he trusted that the citizens of Dundee would enter heartily into the scheme, and subscribe a similar amount, so as to raise the fund to 250,000*l.* Several of the members expressed the gratification it gave them to listen to Dr. Baxter's communication, and the hope was expressed that the provost and magistrates would call a public meeting, in order that steps might be taken to give effect to this munificent offer.

The Chimney at the Criterion.—On Wednesday, at Marlborough-street Police-office, the owners of the Criterion Restaurant were summoned before Mr. Cook, by the Metropolitan Board of Works, for having a chimney in contravention of the Building Act, the said chimney being considered in a dangerous state. Mr. Napier appeared on the part of the Metropolitan Board of Works, and Mr. Bingham, barrister, defended. Mr. R. Walker and Mr. Kerr, district surveyors; Mr. Thomas Verity, architect; and others, were called as witnesses, and, at the conclusion of the evidence and the address of the defendant's counsel, Mr. Cooke said he considered the case came under the Dangerous Structures Act, and made an order that what was required should be done in twenty-eight days.

Free Lectures for the People.—The present Winter Course of the Corporation Free Lectures in the hall of Brown's Library, Liverpool, was commenced on Wednesday, when Mr. J. A. Picton, Chairman of the Museum and Arts Committee, delivered an interesting discourse on "Primæval Man." The Mayor presided, and the hall was crowded to its utmost capacity.

Society of Arts.—The dates for some of the papers which will be read at the Society of Arts before Easter next have been announced. The following are set down for the ordinary meetings (Wednesday evenings):—

Jan. 12.—"A Sanitary Protection Association for London," by W. Fleeming Jenkin, F.R.S. (On this evening, Professor Huxley will preside.)
Jan. 19.—"Causes of Success and Failure in Modern Gold Mining," by A. G. Lock.
Jan. 26.—"Five Years' Experience of the Working of the Trade Marks' Registration Act," by Edmund Johnson.
Feb. 2.—"Trade Prospects," by Stephen Bourne.
Feb. 9.—"The Present Condition of the Art of Wood-carving in England," by J. Hungerford Pollen.
Feb. 16.—"The Participation of Labour in the Profits of Enterprise," by Sedley Taylor, M.A., late Fellow of Trinity College, Cambridge.
Feb. 23.—"Recent Advances in Electric Lighting," by W. H. Preece, Pres. Soc. Tel. England.

Bad Drainage a Bar to Completion.—The action taken last week by the Court of Chancery in refusing to enforce the specific performance of two contracts for the purchase of dwelling-houses in which the drainage was found to be defective, will act as a salutary warning to certain landlords, who have hitherto shown but litttle attention to matters of this description. In each of these cases, the plaintiffs were admitted to have acted *bonâ fide* in their statements, and no charge of fraud was made. Notwithstanding this, however, the Court stated clearly that the discovery of the nuisance afterwards entitled the defendants to decline to carry out their agreement. The question of healthy houses is one of supreme importance, and much good has recently been done by the aid of direct legislation.—*Truth.*

The Electric Light in Buchanan-street, Glasgow.—The first application in Glasgow of electricity to street-lighting in a permanent form took place last evening at the new *Herald* buildings, in Buchanan-street. The proprietors have also contracted with Messrs. Anderson & Munro, electric engineers, Glasgow, to light up the public offices and the composing-rooms of the *Herald* and the *Evening Times* by electricity. The Gramme machines are those used, driven by an Otto gas-engine, supplied by Messrs. P. Watt & Sons,—gas thus curiously so far superseding itself. This gas-engine also works the cyclic elevator in use during the day. The electric lamps are those invented by Mr. Brockie, formerly of Glasgow.

The Land Junction of Great Britain and Ireland.—Mr. J. C. King proposes the formation of an isthmus to join Great Britain and Ireland. The water passage between the Mull of Cantyre and Tor Point is 19 miles wide by about 474 ft. deep, at mid current, but much shallower towards either shore. The high bluffs of Cantyre on the Scotch coast, and the still higher land comprising Mounts Clady, Escort, and Carnlea on the Irish coast,—from 900 ft. to 1,200 ft. high,—offer facilities for gravitating the materials requisite to form the isthmus between the opposite shores. The superficial extent of land required would be little more than a square mile, the average breadth and depth about 100 yards.

Castle Donington.—The site of the new cemetery being distasteful to the Right Hon. Lord Donington, his lordship has offered to find a new site on the other side of the town, and to bear the whole of the cost of taking down and re-erecting a mortuary, chapels, lodge, &c., and has employed the architect of the Board, Mr. Councillor Wills, of Derby, to see the work carried out. Mr. J. Munks, of Hucknall, is the general contractor; Mr. McLean, of Donington Park, is to do the landscape gardening; and Messrs. Stacey, Davis, & Co., of Derby, the front fencing.

The Institution of Civil Engineers.—On the 30th of November, 1862, this society consisted of exactly 1,000 members of all classes; now there are on the books eighteen honorory members, 1,231 members, 1,335 associate-members, and 569 associates, besides 686 students,—in all, 3,839. Two years ago the by-laws were so amended as to allow of the separation of the professional from the non-professional associates, the former being designated associate-members, and the latter retaining the simple title of associate.

Ascot.—The old rectory at Ascot has been considerably enlarged by the addition of an oratory and schoolroom, for the Rev. W. Kerr Pearse, at a cost of 1,020*l.*, by Mr. W. Watson, builder, of Ascot, under the superintendence of Mr. Byrne, architect. The four stained-glass windows in the oratory and schoolroom were executed at the Royal Stained Glass Works at Old Windsor, from the designs of Mr. Westropp.

Electric Lighting for Liverpool.—At a meeting of the Liverpool City Council, on Wednesday last, it was resolved, on the recommendation of the Watch Committee,—"That the tender of the British Electric Light Company (Limited) to provide, fix, and maintain, in the streets and places specified in the city engineer's report, 2,000-candle electric lamps at 2·69d. per lamp per hour for twelve months, from the 1st of March, 1881 (200*l.* additional to be paid to the company if the apparatus is removed at the end of the period of twelve months) be accepted." Mr. Rathbone, in moving the resolution, said that the committee proposed to light the space opposite the London and North-Western Railway, take the light along Lime-street, and down Ranelagh-street. It would cost about twice as much to light the streets with the electric light as with gas; but it would not cost as much as it would do to give the same power of illumination by gas.

The Employers' Liability Act.—On Wednesday upwards of 4,000 colliers in the district of Bolton came out on strike rather than consent to contract themselves out of the Employers' Liability Act. The colliery owners in the Wigan district having given notice to their workmen to terminate all existing contracts, with a view to induce the men to contract themselves out of the Act in favour of the mutual insurance scheme, the men have resolved to ask to be allowed to work for a month under the Act, until a satisfactory arrangement can be come to. ——The committee of the North Wales Quarrymen's Union have issued notices recommending the workmen in the various slate quarries not to accede to the demand that they should contract themselves out of the Act.

Projected Works at Barton and Eccles.—At the monthly meeting of the Barton and Eccles Local Board, on Monday evening last, at the offices of the Board at Patricroft, the clerk (Mr. G. Trenbath) stated that he had received an intimation from the Local Government Board to the effect that Major Tulloch would hold an inquiry at the board's offices on the 12th inst. with reference to the application of the Board for power to borrow 7,900*l.* for street improvements and the erection of public baths.

TENDERS

For premises in the Harrow-road, for Mr. S. B. Newling. Mr. J. Wallis Chapman, architect. Quantities by Messrs. J. E. Goodchild & Son:—

Hearn	£3,299 0 0
Marks	2,999 0 0
Dickson, Roberts, & Lawrence	2,966 0 0
Hook & Oldrey	2,957 0 0
Randell	2,916 17 0
Nunn	2,860 0 0
Allen	2,756 0 0
Rickett	2,100 0 0

For alterations and addition to 367, Strand, for the proprietor of the *Globe* newspaper. Mr. G. R. Tasker, architect:—

		Extra if finished in two months.
Manley	£3,762	Nil.
Bamford	3,350	250
Adamson & Son	3,056	Nil.
Hook & Oldrey	2,963	300
Patman & Fotheringham	2,893	200
Clemence	2,825	Nil.
Nightingale	2,821	Nil.

For work proposed to be done at 37, Hans-place, Sloane-street, for Colonel Stewart. Mr. C. W. Stephens, architect. Quantities by Mr. James Howes:—

Speight & Fawn	£1,463 0 0
Hook & Oldrey	1,455 0 0
Rayment & Sons	1,427 0 0
Parsons & Sons	1,358 0 0

For erecting and finishing (complete) four shops, dwelling-houses, and stables, on the Greyhound-road, Fulham, for Mr. A. J. Christey. Messrs. Habershon & Fawckner, architects:—

Williams	£4,200 0 0
Johnson	3,990 0 0
Higgs	3,848 0 0
Niblett	3,808 0 0
Maton	3,800 0 0
Johnson, Burton, & Son (too late)	3,865 0 0
Parker	3,798 0 0
Shapley	3,795 0 0
Brealey	3,790 0 0
Balaam	3,775 0 0
Ward & Lamble	3,697 0 0
Jones	3,675 0 0
Kearley	3,667 0 0
Johnson	3,610 0 0
Childs	3,600 0 0
Judd	3,570 0 0
Castle	3,569 0 0
Ward (too late)	3,567 0 0
Seale	3,495 0 0
Prout	3,487 0 0
Bull & Cooper	3,459 0 0
Beale	3,457 0 0
Price & Richardson	3,399 0 0
Battley	3,398 0 0
Evans (accepted)	3,157 0 0

For repairs, &c., at 124, High Holborn, for Mr. F. Lezard. Mr. J. Houle, architect:—

Foxley	£374 0 0
Pocock	320 10 0

For additions to the National Industrial Home for Crippled Boys, Kensington. Mr. E. C. Robins, architect. Quantities by Mr. G. R. Tasker:—

Manley	£4,176 0 0
Lucas & Son	4,097 0 0
Ansell	4,073 0 0
Watson Bros.	4,025 0 0
Clemence	3,939 0 0
Bywaters	3,853 0 0

For alterations and additions to Barcombe House, Barcombe, Sussex, for Mr. T. J. Elmore. Mr. George Fuller, architect, Lewes. Quantities supplied:—

Newnham, Brighton	£2,985 0 0
Lockyer, Brighton	2,949 0 0
Parsons, Brighton	2,880 0 0
Barnes, Brighton	2,874 0 0
Cheeseman & Co., Uckfield	2,830 0 0
Card & Son, Lewes	2,737 0 0
Patching & Son, Brighton (accepted)	2,663 0 0

For the construction of 3¼ miles, single line, from Warwick to Leamington, for the Leamington and Warwick Tramway Co. Mr. E. Pritchard, engineer:—
Messrs. Mousley & Lovatt, London (accepted).

For East Dereham sewerage:—

Coates, Northampton	£5,510 0 0
Dyer, London	4,888 0 0
Neave, London	4,800 0 0
Poole, Wimbledon	4,692 0 0
Trim, Horsham	4,651 0 0
Smith, London	4,360 0 0
Gibson, Exeter	4,271 0 0
Finnegan, Northampton	3,744 0 0
Coker, Luton	3,610 0 0
Cook & Bennett, Spalding	3,480 0 0
Matthews, Dover	3,427 0 0
Dobb & Grunmer, Rotherham	3,346 0 0
Doveney & Quesnell, Stoke-on-Trent	3,209 0 0
Hubbard, East Dereham (accepted)	2,843 0 0

For alterations at Howard Arms, South Hornsey, for Mr. Bennett. Mr. H. J. Newton, architect:—

Smith	£541 0 0
Wood	494 0 0
Lamble	412 0 0
Godden	397 0 0
Coles	360 0 0
Walker (accepted)	328 0 0
New Counter.	
Warne	£109 0 0
Heath	99 0 0
Hellings (accepted)	86 17 6
Gasfitting.	
Winn (accepted).	

For painting and decorating at Carpenters' Arms, Stratford, for Mr. Symes. Mr. H. J. Newton, architect:—
Walker (accepted) £108 0 0

For the erection of new Infants' school (Burntwood Board School, No. 2), with boundary walling, &c. Mr. Samuel Loxton, architect. Quantities supplied by the architect:—

Widdowson	£840 0 0
Wiley	807 8 0
Blanchard	800 0 0
Insley	796 10 0
Loughton	776 0 0
Brailsford	764 11 0
Callendar & Day	760 0 0
Tracey	739 0 0
Heap	736 0 0
Marshall	721 0 0
Teece	697 0 0
Bennett	689 0 0
Wistance	678 11 0
Bedford	675 13 6
Barton	675 0 0
Guest	675 0 0
Jones & Son	675 0 0
Moore	658 0 0
Bate	650 0 0
Bentley	650 0 0
Lynex (accepted)	645 10 0

For a new front and alterations to warehouses in Back, street and Welsh-back, Bristol, for Messrs. Davies & Co. Mr. Herbert J. Jones, architect:—

		Allowed for old materials.
Sharp & Graham	£912 0 0	£60 0 0
Virgo & Ford	893 14 0	18 0 0
Lewis & Edgbrook	834 4 0	137 4 0
Eastbrook & Sons	834 0 0	60 0 0
Bastow	829 0 0	25 0 0
Love	760 0 0	34 0 0
Banner	680 0 0	10 0 0
Crocker	675 0 0	
Krauss	627 0 0	
Johnson (accepted)	605 0 0	25 0 0

For new road, sewer, &c., on the Roupell Park estate, for the British Mutual Investment Company (Limited). Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Carter	£2,137 0 0
Tilbury	2,124 0 0
Killingback	2,046 0 0
Meston	2,022 0 0
King	1,877 0 0
Parkhouse	1,775 0 0
Mayo	1,711 0 0
Nicholson	1,590 0 0

For the erection of pair of cottages at Aylestone Park, Leicester, for Mr. G. Hartshorne. Mr. Charles R. Willoughby, architect:—

Lowery	£674 0 0
Brown	671 10 0
Southam	653 0 0
Gilbert & Pipes	651 0 0
Langton & Son	644 0 0
Bass	638 0 0
Knight & Baxter	600 0 7
Bland & Sons	599 10 0
Riddett	593 0 0
Clark & Garrett	593 0 0
Marston (accepted)	533 0 0

For repairs, painting, &c., at the Lansdowne Arms, Lansdowne-road, South Lambeth, for Mr. D. Bear. Mr. Henry Roberts, architect:—

Lathey Bros.	£195 0 0
Lewis	150 0 0
Fisher	149 0 0
Cracknell	138 0 0
Edgley (accepted)	113 0 0

For alterations to bar and bar-fittings:—

Taylor	£303 0 0
Edgley	281 0 0
Lewis (accepted)	245 0 0

For repairs and additions to the boundary-wall of the churchyard of St. Mary Abbott's, Kensington. Mr. Henry Hart, architect:—

Cowland	£359 0 0
Wilkins	339 0 0
Hockley	199 0 0

For Southam Sewage Outfall Works, for the Southam Rural Sanitary Authority. Mr. E. Pritchard, engineer. Quantities supplied by engineer:—

Ottaway, Landford, Thames, Oxford	£3,226 14 2
Doveney & Quesnell, Stoke, Staffordshire	2,115 5 5
Howson & Co., Stoke, Staffordshire	1,719 10 11
Smith, Westminster Chambers	1,600 0 0
Smith, Milverton, Warwick	1,494 0 0
Jakon, Southam	1,390 0 0
Currall & Lewis, Birmingham	1,246 0 0
Dewill, Harbury	1,198 0 0
Green & Son, Warwick	1,177 12 0
Law, Kidderminster	1,139 0 0
Burkett & Co., Birmingham	1,045 0 0
Palmer, Birmingham (accepted)	979 0 0

For erection of gas-meter factory and offices, at Smith-square, Westminster, for Messrs. W. & B. Cowan. Mr. Thomas Arnold architect:—

Higgs & Hill	£3,696 0 0
Braid & Co.	3,589 0 0
Harris & Walbrook	3,564 0 0
Mowlem & Co.	3,550 0 0
Kirk & Randall	3,348 0 0
Shaw	3,156 0 0
Clemence	3,119 0 0

For pulling down and re-building a house and shop 143, Highgate-road, Kentish-town, for Mr. W. O'Hara. Mr. James Robert Furniss, architect:—

Dixon, Highgate-road (accepted)	£811 0 0

For making alterations at the White Horse, North-street, Fitzroy-square, for Mr. Shannaw. Mr. James Robert Furniss, architect:—

White, Park-street (accepted)	£338 0 0

For sundry alterations and repairs at 25, Hatton-garden, and 7, Charles-street, adjoining, for Mr. Fredk. Purnell. Mr. Robert Reid, architect:—

Colls & Son	£794 0 0
Hatfield & Son	729 0 0
Clarke & Mannooch	675 0 0
Foxley	617 0 0

For the erection of factory at Kingsfield Works, Foleshill, for Messrs. J. & J. Cash. Mr. Herbert W. Chattaway, architect:—

Frith, Coventry	£970 0 0
Brown, Coventry	964 0 0
Haywood, Coventry	895 0 0
Worwood, Coventry (accepted)	873 0 0

For the erection of parochial buildings, Southgate, Middlesex. Mr. A. R. Barker, architect. Quantities by J. S. Lee & Son:—

Newby, Southgate	£2,782 10 0
Pocock, Wood-green	2,632 10 0
Kerry, Southgate	2,500 0 0
Patman, Enfield	2,461 0 0

For coffee-tavern, reading-room, shop, &c., Carlisle. Messrs. Hetherington & Oliver, architects:—

C. & J. Armstrong	£1,105 16 8
Metcalfe	1,039 19 1
Wm. Court	1,032 5 1
Bell	1,015 8 0
H. & R. Court	1,012 0 6
Black (accepted)	918 16 5

For additions to Beech-grove, Ascot, exclusive of painting and paper-hanging, for Mr. J. Hichens. Mr. P. J. Byrne, architect:—

Abbott & Charman (accepted)	£375 0 0

For villa residence, at Windsor, for Mr. R. Ford. Mr. P. J. Byrne, Windsor, architect:—

Dakin, Clewer (accepted)	£14,000 0 0

For villa residence, at Egham, for Mr. Robert Oades. Mr. P. J. Byrne, architect:—

Head, Egham (accepted)	£450 0 0

For re-building after fire the Black Horse Tavern, Oxendon-street, Haymarket. Mr. C. J. Knight, architect:—

Bywaters	£1,098 0 0
Howard	1,075 0 0
Clemence	1,045 0 0
Foxley	997 0 0

For the enlargement of St. Mary's Vicarage, Southampton. Mr. A. R. Barker, architect:—

Brinton & Bone, Southampton	£690 0 0
Bull & Son, Southampton	650 0 0
Goodall, Worthing	591 4 0

The Tottenham Local Board have accepted the Tender of Mr. John Bell (19,708*l.*) for Limner asphalte paving, granite kerb, and crossings, for Contracts Nos. 5, 4, 3, and 2.

TO CORRESPONDENTS.

O. M. W. S.—R. S. F.—S. H.—E. H. H.—F. W.—J. C. K.—H. & O.—H. H.—J. C. H.—W. J. M.—H. R.—Anti-Hema.—Exeter Architect.—J. C. M.—J. L.—J. T. B.—S. N.—G. R.—A. M.—J. S.—J. T. P.—H. & O.—H. J. N.—J. U. & Sons.—J. C.—J. R. F.—W. F. D.—H. J. J.—G. F.—P. J. B.—R. P. S.—C. H. G.—S. C.—H. W. C.—W. G. S.—Messrs. P.—R. S.—W. R.—S. C—A. M.—J. B.—E. P.—D. N.—E. E.—E. B. F.—H. N.—S. N.—J. W. P.—G. O.—F. E. jun.—L. & Son.—G. F.—G.—A. D.—J. H.—W. G.—J. T. B.—K. L. (no).—E. F. A. (shall have attention).—J. D. W. (next week).—W. K.—G. & Son.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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THE INDEX and TITLE-PAGE for Volume XXXIX. (July to December, 1880), will be given as a Supplement with the next Number, JANUARY 15th.

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DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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And Farleigh Down.
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White Asphaltes.
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